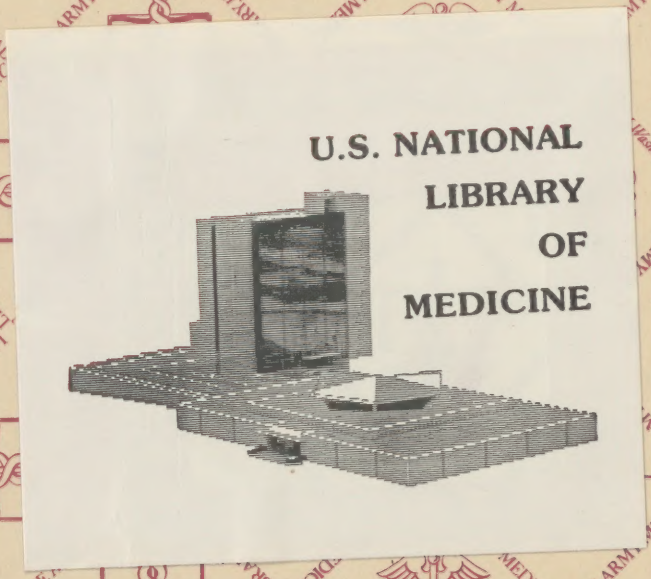

United States Navy Medical Department

Administrative History 1941-45

Volume I Chapters I- VI

Operations Narrative

# THE UNITED STATES NAVY MEDICAL DEPARTMENT

# AT WAR

# 1941-~~45~~ 1945

PREPARED BY
Administrative History Section
Administration Division
Bureau of Medicine and Surgery
Navy Department
1946

# PREFACE

A thousand times and more, the agonizing cry: "Corpsman!" elbowed its way into the tunneled, shrieking, blasting hell which was the war in the Pacific; a thousand times and more, the too casual: "What do you think, Doctor?" breathed out from the stretcher into the blinking staring stars above. Then the awful task of the Navy Medical Department was underlined by the grim reality of blood and lives and men. No one thought that a war which covered every ocean in the globe could be fought without human cost. And the very knowledge of what that cost could be, made the science of medicine join hands with the science of campaigning to keep that cost from becoming an inflated jest of the god of war.

Doctors, dentists, nurses, corpsmen, and allied specialists wove themselves into a crusading pattern of teamwork which baffled again and again the murderous, scientific machines of destruction which spawned in World War II. Steel, flame, and explosive blast erupted against soft, ill-shielded flesh; erupted for sleepless, nerve strained, panic-stricken years. Survival had to be an organized, planned, and militantly scientific campaign if as "many men" were kept "at as many guns as many days as possible" when very seconds counted. The test was beyond heroics, was beyond individual deeds of valor; the test reached the deepest instincts of mankind in the death struggle.

World-wide war, as faced by the Navy Medical Department,

called for concepts of an unprecedented breadth. Every force of nature from the arctic to the tropics had to be conquered. Men nurtured in a clean, temporate, well vaccinated, well-pasteurized New World had to be thrown by the millions into festering jungles, into frozen wastes; had to be thrown into contact with disease ridden peoples of Asia and the Old World. Yet these men could not lose their health or efficiency, as had happened a thousand years before in the crusades, or the hope of decent mankind would perish. Furthermore, every element - the land, the sea, the depths of the sea, the air above - had to be used as fighting mediums. Each medium brought with it its own hazards of disease and illness and of violence from the enemy. There was no shunning or refusing the assignment. Whatever the Navy Medical Department had or could draw from the nation in talent, experience, knowledge, men, materials, and time, time, time had to be adequate. That these were made to be adequate stands as irrefutable testimony of the broad gauge resourcefulness, courage, and wisdom of the men and women of the Medical Department from the Surgeon General to the newest Reserve recruit.

Unprecedented also was the intensity of action, the diversity of the new military science, and the mobility of the front of violence. The military men with the guns and the machines constantly were moving into contact with the enemy-using land, sea, and aircraft, many of which had never before been used by warriors. The military men of medicine had constantly to be moving the sick and injured away from contact with

the enemy by using many of the selfsame land, sea, and aircraft whose principal purpose and planned course was to strike the enemy. This meant a prodigy of supply, organization, and teamwork to employ the backlash of the military stream and at the same time to be in perfect harmony with military operations. Medical activity during fighting can be of only two types: preventive and care. Preventive medicine can be applied to men serving in their normal military capacities before, after, and even during contact with the enemy; but medical care of any but the most cursory type must be performed after withdrawing men from their normal military capacities. Sometimes this withdrawal was to the nearest shelter or to a single deck below, but oftentimes thousands of miles of evacuation were necessary. Whether withdrawal was a few yards or a thousand miles, it still had to be counter to and harmonious with military movements.

New devices to fit new crafts and machines, new drugs to combat new diseases and new environments, and new techniques and science to meet new crushing, mutilating, penetrating, and burning wounds were required. Research was never ending, and organization and techniques were constantly developed and improved upon. Even so, individual resourcefulness and quick judgement, as the dancing flames of war brought a never ending series of surprises, were required. The vision of such individual judgement flashes - one of thousands of similar, true incidents - where a young surgeon finds himself suddenly receiving unexpectedly heavy casualties with gaping belly wounds.

And standing knee-deep in the mud of an LST tank well, where trucks have been coming in and out of the jungle, he improvises an operating table out of the elevator. There under the bright shaft of sunlight, skillfully maintaining an area of surgical cleanliness around his patient, he operates and thus during these golden first moments after the wounded fell saves life after life. By courageously meeting the unexpected turn of events, treatment is begun before infection can weaken the strong hearted fighting men brought to him.

In the past historians have told of potentates, warriors, and peoples, but have told only in sketchy, biographical, or statistical form the story of medical men at war. The picture of the single doctor, dentist, or nurse awaiting a summons from the patient somehow obscures the fact that the medical warrior carries through his mission in a very different manner. He organizes, campaigns, and fights his war against illness and injury with the same zeal and thoroughness as ever do the commanders and men of the line. This history does exist but is appallingly untold. Scientific and technical "histories", as for example of anesthesia, do exist, but the tale of deeds of medical men in terms of mankind is largely untold. The human dreams, successes, and failures in performing the established mission are lost in statistics or biography. As the war of the fighting men in 1812 should not be told only in terms of the science of "ballistics", so the war of the medical men should not be told only in terms of the science, say, of "pathology" or in tabulations of morbidity statistics.

How did they fight? How did they organize? These are the topics considered in this present work. To say that an exhaustive study has been prepared would be erroneous and misleading. Obviously, given so huge and uncharted a topic with stringent time and personnel limitations only the most general treatment has been possible. That not only is to be expected but, perhaps, is to be preferred. Years of careful research should go into fully mapping the heretofore unexplored territory now blazed by the present staff of Navy Medical Department historians.

Methods used in preparing the present works may be interesting and instructive to the reader or to anyone considering a similar undertaking. After the usual bibliographical documentary review to establish the potential sources of data, a short draft of the highlights of the story was prepared. This draft was then subdivided into topics and assigned to a staff of historians for further study. Then in consultations with the officer-in-charge of the project and with the other historians, chapter headings were determined. The chapters were then prepared in accordance with certain agreed-upon mechanics of style and approach, all of which were for the purpose of keeping the text as simple and lucid as possible. Deadlines for the various chapters were set in relation to probable period of active duty of each member of the staff.

It was early decided to restrict the work to the major

campaigns and let those actions carry the weight of the story. Time would not allow for an adequate exploration of all actions, and to have tried to do so would have dissipated the offorts of the staff. It was, therefore, felt that a fuller treatment of the highlights would be more useful than a less detailed, more general approach. Also, matters relating primarily to organization and administration were grouped together into a separate work so as not to hamper the narrative unnecessarily. Both works, the narrative and the administration, furthermore, cite sources extensively so that subsequent research may be performed with the greatest possible expedition. Also much illustrative material has been added in order to aid in visualizing the story.

Sources included the official operations reports, the historical reports prepared by the medical department (supplement to sanitary reports), private correspondence of the Surgeon General and other high ranking officers, witness accounts, official correspondence, memoranda, administrative studies, and reports. Published articles and other printed sources were of very little value, however, largely because there were almost non-existent.

Valued assistance, which sometimes required a great degree of sympathetic understanding for the historian Reservist, was rendered by the top side of the Medical Department. Acknowledgement is especially made of the unswerving support and inspiration of the Surgeon General, Vice Adm. Ross T McIntire, (MC) USN, and the Assistant Chief of Bureau, Rear Adm. W. J. C. Agnew, (MC), USN. Deeply appreciated also was guidance and council of the Special

Assistant to the Surgeon General, Comdr. Arnold F. Emch, H(S) USNR. This support and assistance made possible the successful prosecution of what might have been a very difficult undertaking. Appreciation of the staff was especially great for the lattitude allowed, and the freedom from restrictions permitted as well as the obvious desire to obtain an objective relation of events.

The undersigned acknowledges a debt of gratitude to the staff of historians and research assistants for their loyalty and professional application, especially the able assistance of Lieut. Robert L. Thompson, H(S) USNR, as assistant to the officer-in-charge. Other members of the staff were:

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# INTRODUCTION

## THE ADMINISTRATIVE HISTORY OF THE MEDICAL DEPARTMENT OF THE NAVY

## WORLD WAR II

In the first week of September, 1939, I called together the Heads of Departments in the Bureau of Medicine and Surgery to discuss the events that had taken place in Europe, following the invasion of Poland by Germany. Events that had occurred during the past weeks had convinced me that war was inevitable with Germany and possibly Japan, in the not too distant future. A directive was given at this meeting to all Heads of Departments to prepare an estimate of the situation as far as their Departments were concerned and to present in six weeks' time plans that would be integrated into one overall plan for Medical Department Activities in time of emergency. This was done.

It became apparent immediately that some means of hospitalization adequate for a global war should be secured. As a result, the mobile type hospital was devised. We were fortunate in securing $225,000.00 to develop what was afterwards known as MOB No. 1. This hospital contained its own buildings, power plant, laundry, water supply, etc. It was installed at Guantanamo Bay, Cuba, in December 1939. Five hundred hospital beds were set up there in mobile type buildings. During the following three months, under the command of Captain Lucius Johnson, MC., U.S.N., it served the Fleet during maneuvers in Cuban waters.

Much was learned about equipment that could stand the climate of the tropics, and the mistakes in No. 1 were corrected immediately in MOB No. 2. An all metal type of building was decided on, and with all the improvements that were now available in electrical equipment, and with laundry facilities that were really mobile, this hospital was transported to the Hawaiian Islands where it was erected on Aiea Heights. It so happened that it was completed in time to take an active part in the care of the wounded following the Jap attack on December 7, 1941. MOB NO. 2 justified over and over again the money that was being spent on mobile hospitals.

And, so, from that time on the development of our mobile hospital components went on with great rapidity. A component of fifty beds was as efficient in the care of its patients as a Fleet Hospital of fifteen hundred. All were based upon the same sort of research and development in hospital construction. As the war progressed, some three hundred of those hospitals were erected in all parts of the world and did a highly efficient job in the care of the sick and wounded.

Along with hospital planning went the procurement of medical supplies and equipment. This was planned so well that at no time during the entire war did the Medical Department of the Navy fail to meet a deadline by a Commander in the field or by the Chief of Naval Operations.

Pearl Harbor taught us much, but a great deal of work had been done in research in new drugs, blood plasma, and other blood substitutes. In fact, all through the years of 1940 and 1941 the Navy had been hard at work, in conjunction with our civilian research organizations, in all lines of medical research. Consequently, the loss of life from burns and injuries at Pearl Harbor was cut to a minimum, due to the use of the sulfa drugs, blood plasma, serum albumin, and other forms of treatment.

It was at this time that the great need came for work in the control of epidemic diseases. Here, again, early planning followed by the training of epidemiological teams, paid tremendous dividends in the Pacific war. In fact, the first year of the war will be remembered as a Navy war and was fought in the South Pacific. Consequently, the lessons learned in the tropics, especially in the Solomons, were all applied to warfare in Africa, Italy, and other Mediterranean areas. The work that was done by our epidemiological teams in the Pacific will stand out as one of the bright spots in World War II. Without the work of these fine men we could not have won through in the space of time that we did, and without a much greater morbidity and mortality.

In addition to this, the work in malarial control was outstanding. Here, our planning was greatly aided by the Bureau of Yards and Docks in that we had complete collaboration from battalions of Sea Bees in the work of malarial control as well as in

other sanitary projects in all the Pacific Islands. While we suffered severely in the early days of the Battle of the Solomons due to malarial infections, malaria was thereafter practically defeated. It was later found that the Japanese suffered tremendously from this disease, having no means of control, as they lacked any of the facilities that we possessed, such as Epidemiological Teams and Sanitary Squads.

It should be mentioned here that planning for amphibious warfare became a real necessity, and it was at an early point in 1942 that the Medical Department of the Navy, in conjunction with the Marines and certain Navy components, began thorough training in this peculiar form of warfare. Consequently, by the time the Marianas Campaign came on the handling of casualties became a routine affair, and mortality rates dropped down. When bloody Iwo Jima came about, the care of the wounded and the methods devised for evacuation to transports and hospital ships showed the valuable results of the sound Hospital Corps training methods that had been devised following the lessons learned in the southern islands.

In the Philippines the Hospital Corps played a very marked part in the handling of casualties at the Battle of Leyte. True, there were some medical officers involved, but these were on small ships and it was necessary for the Navy to supply LST's in the first five days of the fighting at Leyte to evacuate the wounded from the immediate combat areas. The rain had turned the Island into

a sea of mud and it was impossible to set up field hospitals; consequently, LST's were moved in on the beaches. The Navy did the job of handling the wounded — some 3500 were cared for by these five little ships during the first five days. At night the LST's would withdraw and transfer their wounded to the Hospital Ship, which would come in from well out at sea and would then retreat again away beyond the battle area, as the Jap did not respect the Red Cross.

Hospital Ships played a significant part in our Navy war. At the beginning of the war two such ships were in commission, but, again, our planning had provided five additional ships that were converted from merchantman, three being of an unusual type called an "APH". This type of ship carried troops of all classes into the combat area and evacuated sick and wounded, returning to the rear areas to distribute them to hospitals. These three ships were treated as combat ones and had no protection as far as the Geneva Convention was concerned. Later in the war it was the good fortune of the Navy Department to secure six Hospital Ships of a fifteen thousand tonnage, with a speed of twenty knots, and completely air-conditioned. These ships contained every convenience known in the most modern hospital. Some of them functioned in battle areas in the last days of the war. While this fine class of ships did not have an opportunity to perform as much as their sister ships of the older types, still they did a splendid service in the post war period, especially in bringing back the wounded from the Pacific and the prisoners of war.

While these advances were being made at sea and on the various islands and stations over the world, personnel planning had not kept abreast of the material. Only in the Hospital Corps was personnel adequate. At the height of the war there were:

| | | |
|---|---|---|
| 14,191 | Officers | – Medical Corps |
| 7,012 | " | – Dental Corps |
| 3,429 | " | – Hospital Corps |
| 10,968 | " | – Nurse Corps |
| 1,125 | Other Officer Personnel (Waves, Line, etc.) | |
| 132,500 | Enlisted Personnel | |
| 12,997 | Civilian Personnel | |
| 182,222 | Total Strength | |

Medical Department personnel operated in submarines all over the world. Medical research that was done through the years preceding the war made it possible for our submarines to go on very long cruises – up to eighty days from station. As the war progressed continued research found even better means of ventilation for these small ships.

Aviation was one of our main concerns and here, again, the Medical Department played its part in finding better safety methods for pilots, better oxygen supply, and helping greatly in the air-sea-rescue program. A new feature was developed later in the war — that of evacuation of the wounded by air, which proved

to be one of the most successful ventures that was accomplished by the Medical Department, in conjunction with the Bureau of Aeronautics. From Okinawa, alone, our ships evacuated some sixteen hundred sick and wounded. Our nurses and hospital corpsmen played a very active part in this whole system, and it became a matter of routine to move the sick and wounded about the vast areas of the Pacific by air. It was not an impossible thing to find wounded men in our continental hospitals in less than a week from the time they were injured in the far Pacific.

At the same time that evacuation of the wounded was taking place, a system of distribution of whole blood was devised and organized and put into operation throughout the entire Pacific area. It was possible to fly tremendous quantities of blood to any part of the Pacific Theatre and deliver it to the field of combat in less than 36 hours. In fact, during the Battle of Iwo Jima, whole blood was being dropped by parachute on the marines during the first two weeks, in less than forty-eight hours of the time of take-off from San Francisco. Blood was supplied to all of the campaigns in the Philippines. The Navy participated in the Blood Program for the European Theatre, but it was considered in the Bureau of Medicine and Surgery that this was an Army project. It might be noted that the Pacific operation was much more effective than the European.

One new project was evolved in the Pacific warfare and that was the establishment of a Research Laboratory - an organization on

the Island of Guam - which was known as NAMRU NO. 2. NAMRU NO. 1 was located at the University of California throughout the entire war and this fine organization, under Captain Albert M. Krueger, Medical Corps, U.S.N.R., did much research in the air-borne diseases, and also contributed greatly to our research in biological warfare. NAMRU NO. 2, under the command of Captain Thomas Rivers, Medical Corps, U.S.N.R., was the most modern laboratory of its kind in the world, and it did a great service in the last year of the Pacific war in searching out and aiding in the control of epidemic diseases. When the assault forces went ashore in Okinawa, a hospital laboratory organization from Captain Rivers's group went ashore, established their mobile laboratories, and did remarkable work in identifying disease organisms and instituting malarial control and prevention of these diseases, which undoubtedly would have attacked our troops. The health record of the Okinawa Campaign is outstanding in the history of warfare.

The Medical Department of the Navy was in complete readiness for the attack on Japan which was to have taken place in November of 1945, and was staging its forces and material in all the bases of the Pacific. Fortunately, these were never needed.

A word should be said regarding the hospitalization that took place in continental areas to care for the sick and wounded of the entire naval forces. It might be noted that 111,000 hospital beds were prepared and of these, at one time, some 97,000 were occupied.

It is a great satisfaction to know that when the war ended there were no useless hospitals in the Naval Service.

During the war the Medical Department of the Navy played its part in the landings on the beaches of Africa, the maintaining of hospitals in the various bases on that continent, and later in Sicily, in Italy, and on the south coast of France. It had a very real place in the Operation Overlord and the work of the Navy in transporting back the wounded from the beaches of Normandy will stand out as one of the fine accomplishments of all time. Hospitals were operated in England for a period of several months, and later as Germany was occupied our forces moved in with other Navy components.

Naval Medical Research was developed during World War II in a manner that was astonishing when the scope that was covered is considered. Specifically, all the methods of research in the relevant fields that were necessary for naval purposes in the progress of the art and science of medicine were developed to a point where effective utilization of proven methods was achieved in many of the fields of combat. For the first time in Military history not only was research conducted in the laboratory, but medical research and epidemiological teams went ashore during the assault phases of amphibious operations. Naval medical research developed to a high degree methods of protection from blast injuries, body armor, oxygen masks, methods of making fresh water from sea water, and providing rations for air-sea-rescue. Protective clothing for both arctic and tropical use was provided in a

very practical manner.

In addition to these lifesaving measures much was done in the fields of tropical medicine, epidemiology, and sanitation. In fact, preventive medicine was advanced many years by the lessons learned during the war. Research in the field of aviation was carried on in a highly satisfactory manner, with emphasis placed on increased safety for the pilot. Oxygen equipment reached a high state of perfection during the last year of the war and the air-sea-rescue technique was perfected to such a degree that hundreds of pilots were rescued in combat areas around Japan while under actual fire. Research was carried on through the entire war in the field of biological warfare, but on a top secret level.

To carry on active medical research in the field, the following laboratories were set up by the Navy:

Naval Medical Research Unit No. 1, Berkeley, California

Naval Medical Research Unit No. 2, Guam, M. I.

Naval Medical Research Unit No. 3, Cairo, Egypt

The records of our Epidemiological Teams in the Middle East, in India, and in China will stand out as a bright spot in epidemiological history, for it was one of our fine organizations that put into effect a treatment for cholera which, when used, was practically one hundred percent effective against that terrible disease. The work of our organization in China will some day be told and it will

provide an almost unbelievable story of the heroism of the men who made it possible.

Atomic warfare had no place in the past war except in its conclusion, but here, too, the Medical Department of the Navy had its place. Medical personnel were on the scene at Hiroshima and Nagasaki, and studies were conducted in conjunction with the Japanese, on the radiological effects of the bomb. These same medical officers were in Japan some twenty months after the dropping of the bomb checking on their early studies. Our personnel was small but fortunately we had men who had an opportunity to go through all the phases of atomic research, so that later when the Bikini operation became necessary our medical personnel had had the training which made it possible to set up the safety program for Admiral Blandy, the Commander of Joint Task Force No. 1.

The Medical Department of the Navy, through the Surgeon General, also represented the Navy Department in the research and development of biological warfare, which may one day become as destructive as war conducted with atomic energy. The story of this subject will be written at a time when secrecy levels have been lowered.

Soon after the United States was plunged into war, President Franklin D. Roosevelt saw the need for a systematic contemporary record of American experience in the global conflict from which succeeding generations might benefit. Accordingly, on

March 4, 1942, he designated a Committee on Records of World War II, headed by Dr. E. Pendleton Herring of Harvard University, to exercise general direction over the writing of a war history. The deliberations of this Committee led to the activation of an Office of Naval Records and History which was charged with writing the war history of the Navy and Marine Corps.

In 1943, the Bureau of Medicine and Surgery, at my instigation, established an historical complement of reserve officers and enlisted personnel. This staff proceeded to develop a broad program to record the role which the Medical Department played in protecting the health of the Navy ashore, in the air, and on the blue water from 1941 to 1945. That record is presented in the present work.

Beginning with Pearl Harbor the Medical Department of the Navy went to war, it operated in every part of the known world today, and it was present at the occupation of Japan — but there is much more to what the Medical Department of the Navy did during the past war. It began with its small force in September, 1939, and on the shoulders of the men and the women of that small force was built a tremendous organization which contained some 200,000 souls at the end of the war. Their part was lifesaving — not destruction. The record of lifesaving is such that it will stand for a long time as something that has never been equaled and certainly not surpassed by any medical organization in any war. Its mortality record of 2.37% is something

that should bring hope to future organizations. It was the fine spirit of the men who operated in the submarines and on the aircraft carriers, who handled the wounded with such efficiency, who helped in rescuing men from the sea after disaster had struck their ships — these were the spectacular things that made this fine record possible. Through it all was the fine teamwork, the sound organization, the patriotic spirit of every man and woman from the Bureau of Medicine and Surgery to the tiniest organization on the smallest Pacific Island.

This experience here recounted is being made available now, when the information is most timely and useful, in order that all departments of the Federal Government may have access to data which will aid in planning future programs and policies; and particularly so that all bureaus, offices and activities of the Navy concerned with postwar plans may benefit from knowing the accomplishments and mistakes of the past. It is my hope that in the days to come there shall be available current histories which will bring together in proper form the most recent experiences of the Medical Department as guides for high policy decisions. History will then be a recognized instrument of naval administration.

This history sets forth the major events, policies, and accomplishments in the Medical Department as exemplified by the most significant naval campaigns, particularly in the Pacific War Theatre, with attention also to the Atlantic and Mediterranean combat areas.

The authors wisely divided the story into two parts:

a narrative account which reviews the operations of the Medical Department ashore and afloat; and an administrative history which records the organizational problems encountered with a description of the steps taken to solve them.

The Bureau of Medicine and Surgery, which I had the honor to direct during the war years, made a record of which every American may well be proud. It was our job as protectors of the health of the Navy and Marine Corps to maintain naval tradition by keeping as many men at as many guns as many days as possible. We successfully carried out this tradition for the largest Navy in the annals of warfare and operated over a wider area than any other water-borne Medical Department in world history.

I wish to express my keen appreciation to those loyal officers, enlisted men, and civilian personnel who cooperated to make possible this historical narrative of the Medical Department of the Navy.

ROSS T McINTIRE
Vice Admiral, MC., U.S.N.,
The Surgeon General

November 1, 1946

PART I

# JAPANESE ATTACKS AND REVERSALS OF THE ALLIES IN THE PACIFIC

# CHAPTER I

## PEARL HARBOR

### Navy Medical Department Preparedness, 1941

Men of the Navy Medical Department at Pearl Harbor were just as surprised as other Americans when the Japanese attacked on the morning of 7 December 1941, and, like other men of the Navy and Marine Corps at Pearl Harbor, they were momentarily stunned by the blow. From their first realization of an enemy attack, however, the doctors, dentists, nurses, and corpsmen were unexcelled in personal bravery, in determination, in resourcefulness, and in their capacity to put into practice previously formulated plans.

Between 1939 and 1941 Pearl Harbor had been fortunate in receiving unusual attention from the Surgeon General and the officers who assisted him at the Bureau of Medicine and Surgery in making plans for the Medical Department. When the facilities of the Pearl Harbor hospital had become overcrowded in 1940, every effort had been made to add to the bed capactiy, equipment, supplies, and personnel of the Hawaiian area. Although the U. S. Naval Hospital at Pearl Harbor had a normal bed capacity of approximately 250 beds and was one of the best equipped and staffed of the eighteen hospitals then in commission, a new hospital that would be removed further from military installations and be less subject to destruction in case of air attack had been planned and was actually under construction at the time of the Japanese attack.

Because of the great concentration of naval personnel and the activities of the Fleet in the Hawaiian area, the Surgeon General requested and secured permission to send out to Pearl Harbor the Navy's second Mobile Base Hospital, a type of transportable facility which was the most significant institutional organization developed by the Navy Medical Department during the pre-war emergency. To add further to the hospital facilities in the Hawaiian area, the hospital ship USS SOLACE arrived at Pearl Harbor shortly after the Mobile Hospital and was in port when the Japanese struck.

The casualties at Pearl Harbor were cared for at a variety of facilities: at the battle dressing stations and sick bays of the war ships; aboard the hospital ship SOLACE; at first-aid stations; at the dispensaries of the two naval air stations; the Marine Corps Air Station at Ewa; the Defense Battalions of the Fleet Marine Force; the Navy Yard, and the Section Base at Bishop's Point; at a "field hospital" which was set up in the Officers' Club of the Navy Yard; and at the Mobile Base Hospital and the U. S. Naval Hospital at Pearl Harbor.

## Medical Service Aboard Ships

During the Japanese attack, boats took the wounded from ships and from the water surrounding the ships. Oil on the water near sunken or sinking ships made swimming difficult for the men overboard. In the vicinity of the USS ARIZONA, where the oil was burning, a boat of the SOLACE was scorched, while the crew, at great danger, rescued men from the water.[1]

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1. Annual sanitary report from the Base Force, Pacific Fleet, for 1941.

Most of the wounded and burned men from the ships and those rescued from the water were evacuated to the hospital ship SOLACE; to the dock where the USS ARGONNE, flagship of the Base Force, was moored; or to landing C near the U. S. Naval Hospital.[2]

The SOLACE, which was unharmed by the attacking force, received its first patients at about 0825. By this time, preparations had already been begun to receive a large number of casualties. Bed patients were moved into upper beds so that the lower beds could be used for casualties. Supplies were broken out and preparations of sterile morphine solution, tannic acid solution, and saline solution were made. Special serums, plasma, and other supplies were issued to dressing stations and wards. One hundred and forty-one convalescent patients were discharged to duty in order to make room for additional casualties in case of repeated air attacks. After casualties began to come aboard the ship at a rapid rate, twenty-three patients were taken care of in the 50-bed emergency ward compartment.[3]

A total of 132 patients were admitted aboard the SOLACE on 7 December.[4] About 80 men were given first-aid treatment only.

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2. Annual sanitary report from the Base Force, Pacific Fleet, for 1941.

3. Annual sanitary report for 1941 from the USS SOLACE.

4. This figure, given in the annual sanitary report for 1941 from the USS SOLACE, is in conflict with the following statement from an article by Eckert and Mader in the Naval Medical Bulletin, vol. 40, p. 552: "Approximately 141 patients were received on board, the majority coming during the attack. This figure is in all probability much less than the actual numbers because many slightly wounded men were given emergency first-aid treatment and returned later on in the day to their stations, subsequent treatment being carried out by their own medical officers."

Twenty-eight patients, 26 of whom were not identified, died. The final census on 7 December showed 177 beds occupied and 253 unoccupied.[5]

After the first air attack the main battle dressing station of the ARGONNE was moved to the secondary battle dressing station, where the injured men from the ship were treated. Later, the medical department of the ARGONNE, aided by medical personnel from other ships, received a large number of wounded and burned men at the dock where the ship was moored.[6]

In the open and under fire, about 150 cots were set up on the dock to take care of the injured men evacuated from ships or rescued from the water. Subsequently, under the direction of the Base Force Surgeon, the cots and medical material were moved to the Officers' Club in the Navy Yard, which was less exposed to enemy fire. By 1030, a "field hospital", supplied and equipped by the ARGONNE, was set up. The dock continued to be used as a clearing station for the wounded. The most severely injured were sent to the Naval Hospital; less severe cases were sent to the Mobile Base Hospital or to the field hospital in the Officers' Club.[7]

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5. Annual sanitary report for 1941 from the USS SOLACE.

6. Annual sanitary reports for 1941 from the Base Force, Pacific Fleet, and the USS ARGONNE.

7. Annual sanitary reports for 1941 from the Base Force and the USS ARGONNE.

Aboard the USS NEVADA 116 men were injured severely enough to require hospitalization; 33 were known to be dead, and 18 were missing. After the first lull in the attack, about 65 casualties received emergency treatment at the forward, amidship, and after dressing stations until these stations were perforce evacuated to the sick bay. In the ship's sick bay between twenty and thirty cases were treated. Throughout the ship, patrol party corpsmen were busy administering first-aid. Two of these corpsmen were recommended for citations by the senior medical officer for their bravery and performance beyond the call of duty. Men of the crew, too, who had previously received first-aid instruction, gave valuable assistance to the medical department in rendering emergency treatment to the injured and burned men. The dead were collected astern. Attempts were made to identify each body before it was tagged and transferred to the Pearl Harbor Hospital. Immediately after the attack there was neither time nor facilities for keeping paper records on either the living or the dead transferred to the hospital.[8]

After the battle was over, the sick bay of the NEVADA had to be moved to the mess room of the chief petty officers. When this area flooded the next day, the medical department was again shifted. A first-aid station was established under the overhang of #4 turret on the main deck aft. On the beach, about fifty yards off the starboard quarter, two tents were set up and supplied and equipped. Health records from the NEVADA were sent to the Receiving Barracks

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8. Annual sanitary report for 1941 from the USS NEVADA.

"for separation and forwarding."[9]

The USS PENNSYLVANIA had four dressing stations. During 1941, partly as a consequence of lessons learned from British experiences in handling casualties in air raids, a station had been established in a part of the ship that was accessible to the crews of the anti-aircraft and broadside guns. This new station, located in the warrant officers' mess room, was "reasonably well protected," had ample space for working, and was near to fixed bunks, toilet facilities, and a supply of fresh water. Ironically, the only bomb that hit the PENNSYLVANIA "detonated in the casemate of the #9 broadside gun on the deck above and just outboard of this space." Among twenty-seven men killed were the junior medical officer and one corpsman stationed in the battle dressing station. Thus the advantages of the location of the station were nullified, and the loss of the doctor and corpsman seriously delayed the care of the wounded.[10]

Neither the action reports nor the annual sanitary reports for 1941 gave much information on the care of casualties aboard ships. The few sanitary reports from ships which mentioned the Pearl Harbor attack, except for the NEVADA, PENNSYLVANIA, ARGONNE, and SOLACE, gave no descriptions of the arrangements made to take care of the casualties.

The sanitary report from the USS HELENA, which had about 100 casualties, devoted a paragraph to the types of wounds and burns

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9. Annual sanitary report for 1941 from the USS NEVADA.

10. Annual sanitary report for 1941 from the USS PENNSYLVANIA.

and explained how the lack of clothing on the men was responsible for such a large number of flash burns. The report estimated that about sixty of the casualties were permanently lost to the ship because of either death or disability. Of these casualties, 26 died before they could be evacuated and 13 died subsequently in the hospital. The supply of tannic acid jelly, dressings, and syrettes was adequate for the casualties sustained by the HELENA. The four Stokes litters allotted to the HELENA were insufficient, and the Army stretchers were useless below decks. There were not enough hospital corpsmen aboard, and, according to the report, if the casualties had occurred at sea, the medical department would have been "sadly handicapped."[11]

Sanitary reports from the ENTERPRISE, CURTISS, and HONOLULU gave casualty figures for their ships. Aboard the USS ENTERPRISE ten officers and men were lost in action; the bodies of only three officers and two men were recovered or identified. Aboard the USS CURTISS, fifteen were killed and sixty-four were injured. The USS HONOLULU had no personnel casualties.

Three sanitary reports mentioned changes made in the locations of battle dressing stations during or after the attack. During the attack, the after battle station of the USS VESTAL was moved from the chiefs' quarters to the lower optical shop aft, which was conveniently located and where the lights were not out. The CURTISS arranged to use the wardroom as the main battle dressing station instead of the sick bay; experience during the attack indicated that

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11. Annual sanitary report for 1941 from the USS HELENA.

the sick bay should be evacuated during battle and closed in order to preserve the water-tight integrity of the ship. The USS GAMBLE, after the action of 7 December, planned to have a battle dressing station in the galley area instead of the wardroom, which was isolated too much by damage control measures.

Several sanitary reports commented upon the value of clothing in preventing or reducing the extent of flash burns. The USS RALEIGH reported that partial protection against burns caused by burning powder and bomb blast could be gained "through the use of proper clothing." The USS DETROIT, the USS MINNEAPOLIS, and the ENTERPRISE, reported that the wearing of long trousers and shirts with long sleeves was required because the attack had demonstrated that such additional clothing provided protection against flash burns.

Medical Service at Shore Stations

Ashore, immediately after the attack, first-aid stations were set up quickly in the Receiving Barracks, Recreation Center, Yard dispensary, Officers' Club, Submarine Base dispensary, Naval Air Station dispensary, and Marine Barracks. The Section Base dispensary at Bishop's Point helped the Army to care for men from Hickam Field.[12]

The sanitary report from the Naval Air Station, Pearl Harbor, estimated that about 200 injured and burned men from the station and ships were given first aid at the station dispensary before they were

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12. Elphege A. M. Gendreau, fleet medical officer, to Rear Admiral Ross T McIntire (MC) USN, Chief of Bureau of Medicine and Surgery, 11 Dec.1941.

sent back to duty or to a hospital. About 130 patients were transferred to the Pearl Harbor Naval Hospital and the Aeia Plantation Hospital. Evacuation of patients started at about 1045. An effort was made to move critical cases first, and by 1430 all of the most seriously injured were transferred. Seven men who died before they could be evacuated and a dead Japanese aviator were sent to the morgue at the Naval Hospital.

The number of casualties at the Kaneohe Naval Air Station, as ascertained the day after the attack, was seventeen dead and sixty-seven wounded. As quickly as the injured men could be brought to the station dispensary, they were given emergency treatment.[13] The dispensary was "inadequate to care for the 75 or 80 wounded who required hospitalization," and a large number of the seriously wounded had to be sent elsewhere. Since evacuation to the Pearl Harbor Naval Hospital was "out of the question," about forty men were sent to the Kaneohe Territorial Hospital for the Insane. Subsequently these men were transferred either to the Pearl Harbor Hospital or back to the station.[14]

At the Marine Corps Station at Ewa, the hospital tents that housed the sick bay and dispensary were "set on fire by incendiary ammunition," and "a large quantity of equipment and medical supplies" were "damaged by enemy gunfire." Under the direction of the medical officer

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13. Commanding officer of the Naval Air Station, Kaneohe Bay, to the commandant of the Fourteenth Naval District, 8 Dec. 1941.

14. Annual sanitary report for 1941 from the Naval Air Station, Kaneohe Bay.

of Marine Aircraft Group Twenty-one, the fire was extinguished and a burning canvas which covered the medical stores was removed. Despite the fire, casualties were taken from the field between attacks and given prompt treatment by the medical officer and his assistants, who continued to work with their damaged equipment while exposed to enemy machine-gun fire. The most seriously wounded men were evacuated to the Ewa Plantation Hospital. Compared with the other stations subjected to attack, the number of casualties suffered at the Marine Corps Air Station was small. Thirteen men were wounded, three were killed during the attack, and a fatally wounded man died five days later.[15]

The medical departments of the First and Third Defense Battalions jointly set up three dressing stations; one was in the dispensary and one was in each of the recreation rooms used by the two battalions. After 1100, a collecting and casualty dressing station which was established in the barracks was receiving slightly injured men from the Fleet units. On the morning after the attack, the first floor of the building where Company A was quartered was made available to the medical department for the care of casualties who required hospitalization.[16] The annual sanitary reports from the First and Third Defense Battalions for 1941 reported that 136 patients were treated between the day of the attack and 10 December, when most of the patients were transferred to the Pearl Harbor Hospital.

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15. "The Japanese Attack of 7 Dec. 1941 on the Marine Corps Air Station, Ewa, Oahu, Territory of Hawaii" (mimeographed monograph prepared by the Historical Division of the Marine Corps).

16. Annual sanitary reports for 1941 from the First and Third Defense Battalions.

Very little information on the Pearl Harbor attack is available in the sanitary reports from other dispensaries in the Pearl Harbor area. The reports for 1941 from the Fourth Defense Battalion, the Section Base at Bishop's Point, and the Naval Ammunition Depot made no mention of the Pearl Harbor casualties. The report from the navy yard had no information on the methods employed for the care and treatment of the casualties, but described briefly the feeding and housing of a large number of survivors and the issuance of unusual quantities of first-aid supplies on 7 December.

## Mobile Base Hospital Number Two

Erection of Mobile Base Hospital Number Two was not yet completed when the Pearl Harbor attack occurred. The materials and equipment of the hospital had been landed less than three weeks before, and only the crew quarters had been put up. Hospital corpsmen had been transferred from the Pearl Harbor Hospital only about one week before the attack.[17]

As a result of experiences with Mobile Base Hospital Number One, the packing and marking of equipment and the arrangements for unloading of Mobile Two were improved in such a way as to speed up the process of assembling materials and supplies. When the emergency of 7 December occurred, it was possible to break out the supplies and to care for the casualties who were received and placed in the crew quarters,

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17. Medical officer in command of Mobile Base Hospital No. Two to the Chief of Bureau of Medicine and Surgery, 13 Dec. and 21 Dec. 1941.

the only buildings then available for patients. Arrangements were made by the Mobile Hospital to care for 125 patients, and 110 casualties were actually received for treatment. Four medical officers from the Mobile Hospital were sent to help at other stations - two went to the Pearl Harbor Naval Hospital, one to the air station, and one to an "emergency station."[18]

U. S. Naval Hospital, Pearl Harbor

The Naval Hospital at Pearl Harbor was only slightly damaged during the attack. Although located near major military installations, the hospital was not hit by any bombs. The roof of the laboratory building was moderately damaged; about one-half of the animal house was destroyed, and a vacant quarters building was set on fire by a crashing Japanese plane. The vacant quarters building was virtually destroyed by the fire, but the blaze was brought under control by fire fighters and did not spread to other buildings. A pharmacist's mate, who was killed by machine gun fire in the navy yard while returning to the hospital from liberty, was the only casualty suffered by the hospital staff.[19]

The first wave of Japanese planes came over the Naval Hospital. At about 0745 about twenty planes, which presumably came either up the channel or low over Hickam Field, passed immediately over and to the

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18. Howard Chambers to Captain Melhorn (MC)USN, 13 Dec 1941; Gendreau to McIntire, 11 Dec. 1941; Medical Officer in command of Mobile Base Hospital Number Two to the Chief of Bureau of Medicine and Surgery, 13 and 21 Dec. 1941.

19. Oman, Doctors Aweigh, pp. 1-5; annual sanitary report for 1941 from the Naval Hospital, Pearl Harbor; Medical Officer in command to the Commandant of the Fourteenth Naval District.

channel side of the hospital buildings. The planes travelled at a high speed and at an elevation of less than 150 feet. None of the planes fired upon the hospital or made any attempt to bomb it. The planes moved so rapidly that the men who saw them, and who were at first uncertain of their identity, were unable to give warning to the intended victims of the attack.[20]

Members of the hospital staff were notified immediately to report to the hospital. As it was Sunday morning, many of the medical officers were at home. The commanding officer, the executive officer, and the other men who lived on the reservation were the first to arrive. Medical officers who were not on the reservation were longer in reporting, but by 0915 the entire staff of the hospital was on duty. Medical officers and corpsmen from ships which had suffered damage during the attack reported intermittently throughout the morning. The two surgeons from the Mobile Hospital were assigned to one of the surgical teams of the hospital. A doctor of the Medical Corps who was convalescing after a major operation voluntarily returned to duty and worked until he became exhausted at the end of the third day. A large number of civilian women who had nursing or first-aid training volunteered to assist the twenty-nine Navy nurses. A total of 114 registered nurses were supplied through the local Red Cross and as many as 26 of these were on duty at one time. About eight or ten nurses who were wives of enlisted men were of "valuable assistance."[21]

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20. Oman, Doctors Aweigh, pp. 1-5; Medical Officer in Command to the Commandant of the Fourteenth Naval District.

21. Oman, Doctors Aweigh, pp. 1-5; annual sanitary report from the Naval Hospital, Pearl Harbor; Ravdin-Long report; Medical Officer in Command of the Naval Hospital, Pearl Harbor 19 Dec. 1941.

Soon after the first attack, special measures were taken to protect the hospital, and arrangements for receiving a large number of casualties were made. At about 0800, stations for air attack were manned. Ambulances and fire-fighting equipment were dispersed so as to avoid total destruction in case of a hit. All battle dressing stations in the wards and the operating suite were set up by 0815. Medical officers, as they arrived, were sent to various dressing stations. Four operating teams were assigned to the main operating suite. A station for minor injuries was established in a vacant building formerly used as nurses' quarters. Patients in the brig and the locked ward were released. To make more room for casualties, ambulatory patients were transferred to two old frame buildings and five hospital tents in the rear of the hospital. Convalescent patients who "requested that they be returned to duty" were permitted to return as best they could to their commands.[22]

The three hospital ambulances, ambulances from other stations, military and civilian trucks, personal cars, and delivery wagons were used to transport casualties to the hospital. Motor transportation was managed by the navy yard garage, where a pool of all vehicles was formed. The device of the pool enabled cars to be sent out in an orderly way to places that needed and could effectively

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22. Oman, Doctors Aweigh, pp. 1-5; annual sanitary report for 1941 from the Naval Hospital, Pearl Harbor; the Medical Officer in Command of the Naval Hospital, Pearl Harbor, to Chief of the Bureau of Medicine and Surgery 16 Jan. 1942; Medical Officer in Command of Naval Hospital, Pearl Harbor, to the Commandant of the Fourteenth Naval District 19 Dec. 1941.

utilize ambulance service.[23]

Civilian as well as military personnel assisted in the transportation of casualties. Under fire and "with no thought of possible injury to themselves or their automobiles," civilians "spontaneously cooperated in bringing casualties to the hospital promptly."[24]

The first casualties arrived at the hospital within ten minutes after the first attack, and by 0900 they were coming into the hospital in a steady stream.[25] Under the supervision of the commanding and executive officers, casualties were distributed to the main operating suite or to any one of the twelve wards where empty beds were available.[26] A receiving ward would have caused a "hopeless bottleneck," and was not used.[27] Although an effort was made to send

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23. Annual sanitary report for 1941 from Naval Hospital, Pearl Harbor; medical officer in command of the Naval Hospital, Pearl Harbor, to the Chief of the Bureau of Medicine and Surgery 16 Jan. 1942; medical officer in command of the Naval Hospital, Pearl Harbor, to the commandant of the Fourteenth Naval District 19 Dec. 1941.

24. Medical officer in command of the Naval Hospital, Pearl Harbor, to the commandant of the Fourteenth Naval District 19 Dec. 1941.

25. Medical officer in command of the U. S. Naval Hospital, Pearl Harbor, to the commandant of the Fourteenth Naval District 19 Dec. 1941; Ravdin-Long report.

26. Oman, Doctors Aweigh; medical officer in command of Naval Hospital, Pearl Harbor, to the commandant of the Fourteenth Naval District 19 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to the Chief of the Bureau of Medicine and Surgery 16 Jan. 1942.

27. Medical officer in command of Naval Hospital, to Chief of the Bureau of Medicine and Surgery 16 Jan. 1942.

acute surgical cases to the surgical wards and fracture cases to the orthopedic wards every ward received a variety of cases.[28] The great majority of patients with burns were sent to the medical wards.[29] A regrouping of cases according to type of injury was not attempted during the day of the attack.[30]

Accurate records for the patients admitted to the hospital could not be kept. The rate was much too rapid at first for the men to be properly tagged and for information such as the name, next of kin, and religion to be recorded. Not until the afternoon was it possible to begin recording admission data. Even then the necessary information could not always be obtained. None of the patients wore metal identification tags; and the service, health, and pay records of men were frequently missing. Furthermore, many patients who were unconscious when admitted to the hospital died before they could be identified.[31]

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28. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery 16 Jan. 1942; Ravdin-Long report.

29. Annual sanitary report for 1941 from Naval Hospital, Pearl Harbor; medical officer in command of Naval Hospital, to Chief of Bureau of Medicine and Surgery 16 Jan. 1942.

30. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942.

31. Gendreau to McIntire 11 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of the Bureau of Medicine and Surgery 16 Jan. 1942; medical officer in command of Naval Hospital, Pearl Harbor, to the commandant of the Fourteenth Naval District 19 Dec. 1941.

A total of 546 battle casualties and 313 dead were brought to the hospital on 7 December.[32] Approximately 452 casualties were admitted to the hospital in less than three hours.[33] Of the total admissions, 93 came from battle stations aboard ships, temporary first-aid stations ashore, and several plantation hospitals in the vicinity of Pearl Harbor.[34] A record was not kept of more than 200 men who received first-aid for slight injuries and were returned to duty immediately without being admitted to the hospital.[35] The census of patients in the naval hospital at midnight, 7 December, was 960.[36]

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32. The figures given in the text are derived from letter of medical officer in command of Naval Hospital, Pearl Harbor 19 Dec. 1941. The Ravdin-Long report stated: "At least 490 men were treated during the day of December 7th in the wards, and from 200-300 received first-aid treatment but were not admitted...There are records of 482 men dead upon admission to the wards." Gendreau to McIntire 11 Dec. 1941, stated: "The Hospital at Pearl Harbor had admitted, by 1750, a total of 705 wounded and received 124 dead on December 7th."

33. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of the Bureau of Medicine and Surgery 16 Jan. 1942.

34. Medical officer in command of the Naval Hospital, Pearl Harbor, to commandant of Fourteenth Naval District, 19 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Ravdin-Long report.

35. Medical officer in command of Naval Hospital, Pearl Harbor, to the commandant of Fourteenth Naval District, 19 Dec. 1941; Ravdin-Long report.

36. Oman, Doctors Aweigh, p. 4; medical officer in command of Naval Hospital, to commandant of the Fourteenth Naval District, 19 Dec. 1941; annual sanitary report for 1941 from Naval Hospital, Pearl Harbor.

Identification of the dead and preparation of bodies for burial began at about 1100 of the day of attack. This "most unpleasant" work was done by a detail under the supervision of a hospital pathologist of the Medical Corps, who was assisted by an officer of the Dental Corps, and an officer of the Hospital Corps. Identification was slow, difficult, and sometimes impossible. None of the men were metal identification tags, and the clothing of some of the men was marked with several different names. Some of the bodies were so badly charred or mutilated that they could not be identified from physical features; fingerprints could not be taken from some of the men because their fingers were missing or badly mangled; and only portions of some bodies were brought in.[37]

A systematic procedure for keeping records on the dead was followed. On the Navy form for reporting deaths all available data, including fingerprints and names if possible, were recorded. Each body, whether identified or not, was tagged with a serial number. This serial number was also placed on the Navy form for reporting deaths, the grave marker, the casket, and on the canvas wrapping, if used.[38]

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37. Medical officer in command of Naval Hospital, Pearl Harbor, to commandant of Fourteenth Naval District, 19 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Gendreau to McIntire, 11 Dec. 1941.

38. Medical officer in command of Naval Hospital, Pearl Harbor, to commandant of Fourteenth Naval District, 19 Dec. 1941; Gendreau to McIntire, 11 Dec. 1941.

All bodies, except those of identified officers, were placed in plain wooden caskets. "Bodies of officers were placed in standard Navy caskets in order that they might later be disinterred and shipped home if desired."[39] Burials began on 8 December in Oahu Cemetery, Honolulu.[40] Two officers of the Chaplain Corps and two civilian priests from Honolulu rendered proper religious rites at the hospital and at the funeral ceremonies held each afternoon in the Oahu and Halawa Cemeteries. The brief military ceremony held at the burial grounds included a salute fired by a Marine guard and the blowing of taps by a Marine bugler.[41]

Supplies at the Naval Hospital were, in general, sufficient to take care of the unprecedented demands created by the Pearl Harbor disaster. Shortages of dried plasma and tannic acid developed because of the great number of burn cases. Additional wet plasma was obtained from the blood bank established at the Queen's Hospital, Honolulu;

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39. Medical officer in command of Naval Hospital, Fourteenth Naval District, to the commandant of Fourteenth Naval District, 19 Dec. 1941.

40. Although additional land for the naval plot in the Oahu Cemetery was acquired, it soon became apparent that enough land could not be obtained there. Consequently a site for a new cemetery on the naval reservation in the Red Hill area was authorized by the district commandant, selected by the Public Works Department, and approved by the district medical officer.

41. Medical officer in command of Naval Hospital, Pearl Harbor, to commandant of Fourteenth Naval District. 19 Dec. 1941; Gendreau to McIntire, 11 Dec. 1941.

and other supplies were requested by dispatch and flown from the West Coast by plane.[42]

## Medical Supplies

Three kinds of medical supplies were exceptionally useful in caring for the Pearl Harbor casualties. Morphine sulphate was given to relieve pain both at the time of first-aid treatment and after evacuation to the hospital or hospital ship.[43] Syrettes of morphine were particularly easy to administer by the men who rendered first-aid.[44] Plasma was a potent weapon against shock, the most dangerous threat to the lives of most of the men who were hospitalized.[45] The sulfa drugs,

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42. Annual sanitary report for 1941 from Naval Hospital, Pearl Harbor; Ravdin-Long report.

43. George A. Eckert and James W. Mader, "The SOLACE in Action," Naval Medical Bulletin, vol. 40, No. 3 (July 1942), pp. 552-557; annual sanitary report for 1941 from the Naval Air Station, Pearl Harbor; annual sanitary report for 1941 from the Base Force, Pacific Fleet; Fleet Medical News Letter, No. 10-41 (mimeographed copy); medical officer in command of Naval Hospital, Pearl Harbor, to Chief of the Bureau of Medicine and Surgery, 16 Jan. 1942.

44. George A. Eckert and James W. Mader, "The SOLACE in Action," Naval Medical Bulletin, vol. 40, No. 3 (July 1942), pp. 552-557; I. S. Ravdin and Perrin H. Long, "Some Observations on the Casualties at Pearl Harbor," Naval Medical Bulletin, vol. 40, No. 2 (April 1942), pp. 353-358; annual sanitary report for 1941 from Base Force, Pacific Fleet; "Fleet Medical News Letter," No. 10-41 (mimeographed copy).

45. "Some Observations on the Casualties at Pearl Harbor," Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Navigation, 22 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Ravdin-Long report.

which were given orally and locally, were undoubtedly a major factor in preventing infection of many wounds and burns.[46]

## Types of Injuries and Their Treatment

The casualties at Pearl Harbor suffered from many types of burns and wounds. Most of the burns were extensive and superficial. There were numerous variations in the types of wounds. There were flesh wounds; gunshot wounds of the head, neck, body and extremities; small, medium, and massive wounds caused by shell and shrapnel; extensive wounds produced by fragments of bombs and metal; penetrating abdominal wounds; traumatic amputations; wounds which contained foreign bodies; and simple, comminuted and compound fractures. A number of men also suffered from asphyxia. Some of the men suffered from a combination of wounds and burns. Mouth and jaw wounds were surprisingly rare. The number of men who developed neuropsychiatric disturbances as a result of the bombing was small. Only nineteen neuropsychiatric cases, of which seven were treated just a few days, were admitted to the Pearl Harbor Naval Hospital. Almost all the patients suffered from shock in varying degrees.[47]

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46. "Some Observations on the Casualties at Pearl Harbor," Naval Medical Bulletin, vol 40, No. 2, pp. 353-358; Ravdin-Long report.

47. D. C. Emerson, memorandum on Dental Corps at Pearl Harbor, 7 Dec 1941; 15 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan, 1942; Ravdin-Long report.

About sixty percent of the casualties were burn cases.[48] Over seventy percent of the cases admitted to the SOLACE were burn cases,[49] and about forty-seven percent of those admitted to the Naval Hospital were burn cases.[50] According to one source of information, 254 burn cases were admitted to the Naval Hospital;[51] another source stated that "approximately 350 patients were admitted with body burns."[52]

Some of the burns were caused by burning fuel oil and many were "flash burns" caused by "temporary but intense heat from exploding bombs." Although superficial, the flash burns were quite extensive; some of the men had as much as eighty percent of the body surface burned. Patients who were admitted to the hospital while still living suffered from first and second degree burns. Most of the deeply burned died before they could be hospitalized. Of the men whose faces were burned, the eyes of only four were "damaged". Many of the burn cases were "complicated by multiple shrapnel wounds."[53]

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48. Hygeia, vol. 20 (May 1942), pp. 342-358; annual sanitary report for 1941 from the USS RALEIGH; "Fleet Medical News Letter," No. 10-41.

49. "The SOLACE in Action," Naval Medical Bulletin, vol. 40, No. 3 (July 1942), pp/ 552-557.

50. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942.

51. Oman, Doctors Aweigh, pp. 9-11.

52. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Navigation, 22 Dec. 1941.

53. Oman, Doctors Aweigh, pp. 9-10; "The SOLACE in Action," Naval Medical Bulletin, vol. 40, No. 3, pp. 552-557; "Some Observations on the Casualties at Pearl Harbor," Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358; annual sanitary reports for 1941 from the Naval Air Station, Pearl Harbor, and the Base Force, Pacific Fleet.

The extent of the burns suffered by the men was determined by the amount of clothes they happened to have on at the time of the attack. Of the men who were burned, those with the least amount of clothing suffered the most extensive burns. Indeed, the correlation between the amount of uncovered body surface and the amount of body surface affected was strikingly high. Often times the burns simply followed the line of clothing. All the doctors who reported on the Pearl Harbor burn cases remarked upon the protection that clothing offered against the so-called flash burns. Even skivvy shirts, shorts and other thin apparel served as protection against flash burns. Men who were wearing undershirts had no burns on the chest or abdomen; men who were wearing undershirts and shorts only, had burns on the face, arms, and legs; men who were completely dressed usually had only their faces and hands burned.[54]

Most of the burned patients who had been overboard in water, when they came to the hospital or hospital ship, were covered from head to foot with fuel oil. There was no time to attempt preliminary cleansing of these patients and comparatively scant cleansing of wounds and burns could be done at first. Consequently the body surface was treated as though no oil were there, and local treatment for burns was applied over the oil. The efficacy of treatment was apparently

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54. "Some Observations on the Casualties at Pearl Harbor," Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358; "The SOLACE in Action," Naval Medical Bulletin, vol. 40, No. 3, pp. 552-557; annual sanitary report for 1941 from the Base Force, Pacific Fleet; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Navigation, 22 Dec. 1941; Ravdin-Long report.

unaffected by this unusual procedure.[55] According to "Fleet Medical News Letter 10-41," the removal of fuel oil from casualties, described as a "tedious" and "painful" process, was accomplished by "washing with large quantities of water and soap." Two medical officers from the SOLACE reported that they "found that the most effective method was the use of tincture of green soap with water."[56]

The treatment of burns was left to the discretion of the ward officers and varied a great deal. All patients were subjected to some type of tanning process as rapidly as possible. Tannic acid jelly and solution, picric acid, gentian violet, and the triple dye, with or without silver nitrate, were the main substances applied to the burns. Sulfanilamide powder was mixed with these substances in some instances. Morphine was administered to men with severe and painful burns.[57]

Because of the large number of burn cases, means of applying the substances to a great number of men in a short time had to

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55. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Navigation, 22 Dec. 1941.

56. Naval Medical Bulletin, vol. 40, No. 3, pp. 552-557.

57. Hygeia, vol. 20, pp. 342-358; Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358 and vol. 40, No. 3, pp. 552-557; annual sanitary report for 1941 from Naval Air Station, Pearl Harbor; Gendreau to McIntire, 11 Dec. 1941; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Ravdin-Long report.

be improvised. At the Naval Hospital, ordinary flit guns were used to spray tannic acid solution upon the burned sufaces. Aboard the SOLACE, dressings which were soaked in tannic acid solution were placed on the burned areas. Dressings were also dipped in a mixture of mineral oil and the sulfa drugs and applied to the burns. These liquid applications were "more easily applicable and more practical" than the tannic acid jelly which was pressed from the tube containers and smeared on the burn.[58]

During the day of the attack, the observation of steril precautions was generally not attempted. Applications were made to all parts of the body that were burned; the face, hands, and feet were treated like any other part of the body. The eyes were protected while the face was being sprayed. Patients who came on board the SOLACE with tannic acid dressings already applied were not treated except to keep them wet during the next twenty-four hours.[59]

On the second and third day after the attack, men with severe burns were placed under heat cradles. Numerous improvised bed cradles were used. These heat treatments were continued night and day for about a week.[60]

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58. Naval Medical Bulletin, vol. 40, No. 3, pp. 552-557; "Fleet Medical News Letter" 10-41; medical officer in command of Naval Hospital, Pearl Harbor, 16 Jan. 1942.

59. Naval Medical Bulletin, vol. 40, No. 3, pp. 552-557; Ravdin-Long report.

60. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942.

Early debridement of the burned areas was not attempted. On the third day after the attack, when eschars were removed, different forms of local treatment, including tannic acid solution, gentian violet spray, sulfanilamide in mineral oil, wet dressings, and open exposure under a heat cradle, were used with no apparent difference in the results. On the fourth day and thereafter the treatment continued substantially unchanged. Patients were cleaned in the morning, debridement was carried out, applications were made, and plasma and other intravenous fluids were administered.[61]

After the second and third days, sulfathiazole and sulfanilamide were administered to patients with burns that became infected. Patients with elevated temperatures, when caused by local infection, were given one gram of sulfanilamide every four hours until their temperatures became normal. After the fourth and fifth day, sulfanilamide in powder form or suspended in petrolatum was applied locally to infected parts of the burned surfaces.[62]

Shock treatment for the burn cases started as rapidly as possible. Heat, plasma, normal saline and saline solution with five percent glucose were given. For the first forty-eight to seventy-two hours, when only small amounts of plasma were available, normal saline or saline with glucose solutions were given. By the third

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61. Naval Medical Bulletin, vol. 40, No. 3, pp. 552-557; medical officer in command of Naval Hospital, Pearl Harbor, 16 Jan. 1942.

62. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942.

day, wet plasma was available to supplant the saline solution and dried plasma. Doctors and nurses, assisted by hospital corpsmen, administered the plasma. Drs. I. S. Ravdin and P. H. Long reported that medical officers at the Naval Hospital were "exceedingly skillful in getting into veins which could not be seen or felt."[63]

Administration of plasma and other intravenous therapy for burn cases was extremely difficult because of the edema which many patients with burns suffered. The location of constricting or collapsing veins was especially difficult at night during the first week or ten days, when, because of blackout precuations, only the dim blue light from flashlights was available.[64]

Many of the injured men had compound fractures. These patients were given tetanus toxoid or prophylactic antitoxin until the supply was exhausted. Procaine anesthesia was given to most of the men who were in shock. Plasma, when it became available, was given to the men who were in severe shock. The skin surrounding the injured part was cleaned with soap and water. A partial debridement was done for almost all the wounds. After debridement and reduction, crystalline sulfanilamide was placed in the wound and the surface was covered with sterile vaseline gauze. Over this dressing

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63. Ravdin-Long report.

64. Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Ravdin-Long report.

a cast of plaster of paris was applied as soon as possible. The part was then X-rayed and the position of the fragments outlined with indelible pencil on the cast. This method of marking the cast proved to be a useful way of providing desirable information to medical officers who treated the men after their evacuation. For from four to ten days after the initial treatment, patients with the compound fractures were given sulfanilamide or sulfathiazole by mouth.[65]

This method of treating the compound fractures proved quite satisfactory. Drs. Long and Ravdin, who saw these patients during thier investigation, reported that they had done amazingly well. "The patients (December 17th) looked well, there were no excessive febrile reactions, and their morale was excellent."[66] The same two doctors stated in an article in the Naval Medical Bulletin:

> Seven weeks after injury the wounds were healing rapidly. In many instances there was clinical evidence of union. There were no instances of serious infection except in three patients with knee joint injury. The fragments had remained in good position. There was no evidence of osteomyelitis of the long bones. These achievements would not have been anticipated prior to the advent of sulfonamide therapy.[67]

Because of lack of time and insufficient medical personnel, surgical operations could not always be performed upon

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65. Medical officer in command of Naval Hospital, Pearl Harbor, 16 Jan. 1942; Ravdin-Long report; Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358.

66. Ravdin-Long report.

67. Vol. 40, No. 2, pp. 353-358.

men within six hours after they were wounded.[68] Excision of wounds could not be attempted in some cases until the third or fourth day.[69] While the supply lasted, these patients were given tetanus toxoid or antitoxin.[70] While awaiting definitive treatment, wounds were treated by infiltration of novacaine, excision of the worst torn skin and muscle, application of sulfanilamide powder, and dressing with vaseline or plain sterile gauze.[71] Absence of infection in most of these wounds indicated that with the aid of sulfa drugs, the time between injury and definitive treatment could be extended safely, when necessary, beyond the six-hour "golden period" of therapy.[72]

The Success of Navy Medicine at Pearl Harbor

Abundant testimonials of the success of the Navy Medical Department on 7 December 1941, can be found in the files of the Bureau of Medicine and Surgery. Two civilian doctors, I. S. Ravdin and Perrin H. Long, who were sent to Pearl Harbor and the West Coast

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68. Medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Ravdin-Long report; Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358.

69. Ravdin-Long report.

70. Ravdin-Long report.

71. Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358; medical officer in command of Naval Hospital, Pearl Harbor, to Chief of Bureau of Medicine and Surgery, 16 Jan. 1942; Ravdin-Long report.

72. Naval Medical Bulletin, vol. 40, No. 2, pp. 353-358; Ravdin-Long report.

to investigate the medical and surgical treatment of the casualties, commended the professional service rendered to the wounded and burned men. The fleet medical officer, who felt "extremely proud of the manner in which the Medical Departments involved handle this sad situation," reported in a letter of 11 December that all casualties were "properly, expeditiously, and thoroughly treated and housed without the least confusion and with a splendid spirit." The medical officer in command of the Naval Hospital at Pearl Harbor, in a report to the commandant of the Fourteenth Naval District, dated 19 December, commended members of the hospital staff for the "exemplary manner" in which they performed their duties and stated that the "hospital organization operated smoothly and efficiently." The medical officer in command of Mobile Hospital Number Two, in a report to the Chief of the Bureau of Medicine and Surgery, dated 13 December, praised the "remarkable job of breaking out needed supplies and equipment from storage piles," and expressed his belief that the achievements of the Mobile Base Hospital at Pearl Harbor prcvided additional proof of the utility of this new type of hospital. The commanding officer of the Naval Air Station at Kaneohe Bay, in a report to the commandant of the Fourteenth Naval District, dated 8 December 1941, affirmed that the "wounded and dead were collected as rapidly as possible and the station dispensary functioned in an excellent fashion." The sanitary report from the First Defense Battalion, stated that "all hands turned to and performed their duties in an able and efficient manner." The Marine Corps officer in charge of the Third Defense Battalion declared: "I most heartily commend the Medical and Hospital Corps of

this battalion on their performance of duty during the defense of the Navy Yard, Pearl Harbor, T. H., against the Japanese air attack on 7 December, 1941. The promptness and coolness under fire with which the aid stations were established and the preparations for and the treatment and evacuation of wounded in the midst of a terrific bombing and strafing attack indicated a very high state of morale, training, and ability." Only a small proportion of the ships at Pearl Harbor mentioned the attack in their sanitary reports for 1941, but in the reports from the SOLACE, ARGONNE, CURTISS, HONOLULU, and NEVADA statements were recorded similar to those from the shore establishments.

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# CHAPTER II

## MANILA BAY AND THE NETHERLANDS EAST INDIES

### Manila Bay

A few days after the Japanese attack on Pearl Harbor, war came to the Manila Bay area of the Philippine Islands when on 10 December 1941 27 Japanese two-motored bombers dropped their demolition and incendiary bombs on the Cavite Navy Yard. The United States naval medical establishments at Cavite, Canacao, Corregidor, Mariveles, Manila, and aboard the numerous ships in Manila Bay were soon confronted with the stupendous task of caring for the thousands of injured civilians and service personnel. In the retreat through the Philippines and the Netherlands East Indies the personnel of the Navy Medical Department were called upon to provide such care as they could for the sick and injured and to evacuate them by any means possible, as the advancing Japanese drove the Allies southward.

With the operation of normal medical facilities disrupted, the work of medical personnel was characterized by individual activity and devotion to duty under extremely hazardous circumstances. In view of the disruption of organization and the nature of documents available, this account is confined largely to the work of selected typical medical establishments and the personnel who manned them.

When the Navy Yard Dispensary at Cavite, on which the enemy first centered attention, was completely destroyed in the initial attack, according to the war plan, medical personnel located there reported to the medical posts scattered throughout the yard. The medical station in an old storage room under the naval prison proved to be better protected against aerial attacks than the others, so most available medical supplies were moved there.

Murray Glusman

Among the medical officers assigned to the station under the prison was Dr. Murray Glusman, a young naval lieutenant (junior grade) who had been in the Philippines since 6 September 1941. The unpublished story of Glusman's tour of duty illustrates the manner in which the Navy Medical Department carried on its work around Manila from the time of the initial attack until the fall of Corregidor 6 May 1942.[1]

Casualties began to arrive at Glusman's aid station soon after the first wave of enemy bombers had passed and within a short time it was jammed with the dead, dying, and injured. Meantime a direct hit fired the building overhead and the patients had to be evacuated. Glusman accomplished this by loading the injured into a truck bound for Canacao Naval Hospital. The next day he was ordered by the senior medical officer at Cavite to report to the senior

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1. "The Glusman Narrative History", 8 June 1942, prepared by Comdr. Thomas H. Hayes, (MC), USN, while a prisoner on Corregidor, p. 1. MS in Hospital Corps Archives. Cited hereafter as Glusman, p. 1.

medical officer in Manila. There he became part of a surgical team stationed at Holy Ghost College, then a United States Army medical station.

During the next few days the early fall of Manila became increasingly apparent, so finally on 26 December, Glusman, with seven corpsman, departed by truck for Mariveles, arriving at the height of an air raid. The dressing station to which he was assigned lay up the Cabulog River valley and served a very useful purpose as a center for the care of casualties, which were constantly occurring in the Mariveles area as the bombing grew more intense. During one concentrated raid, bombs and shrapnel fell so heavily that Glusman and Doctor Cohen, his colleague, "were driven to treating their cases in fox holes, the river bed, and in one instance at the height of the raid successfully completed an amputation in a ditch".[2]

In the middle of January 1942, Glusman himself became a malaria patient in Army Hospital Number Two where he was obliged to remain for seven days. Upon his return to his station, he found that the work load was increasing daily as malaria, dengue, and the dysenteries had become rampant. Meantime hostile air activity continued to increase in frequency and intensity until the station became untenable for medical facilities. Glusman elected to move his forty patients and found space for them at Army Hospital Number One at Little Baguio. He joined the medical officer of the section base, who was carrying on in a small area of a tunnel which was still under

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2. Glusman, p. 5.

construction. Medical personnel lived in small tents, bahias, and fox holes near the tunnel mouth, into which they could scurry during raids.

By 1 April it was evident to Glusman and his group at Marivoles that things were not going well at the front. Morale was bad, and there was an alarming prevalence of food deficiency diseases, malaria, and dysentery. On 8 April, while American demolition squads were blowing up their own munitions dumps in the Bataan hills, Glusman received orders from the Commander of Base Force, Marivoles, to load a few essential medical supplies into a truck and proceed to section base docks where he would embark for Corregidor. He took the four patients then under his care along. On Corregidor Glusman reported to Commander Hayes and was assigned as Assistant Battalion Surgeon with the Fourth Reserve Battalion, Fourth Marine Regiment.

The area occupied by this battalion was devoid of prepared shelters and had very little natural protection. Glusman set up his equipment just outside a small tunnel in which patients could be given some protection when the fire became especially heavy. Enemy fire covered the island so closely that Glusman's medical supply dump received three direct hits. Despite the severity of the attack from Bataan, the medical station continued to function. The wounded were brought in and treated as circumstances permitted.

On the night of 5 May the enemy invaded the island in the east sector. Glusman and the battalion surgeon were ordered to Malinta Tunnel, in the rear of the troops, where they established their station. The following morning an urgent call for help was

received from the Navy communication tunnel at Monkey Point, where an aid station was being maintained by a chief pharmacist's mate without the aid of a doctor. Monkey Point lay in the extreme east sector, with the enemy landings between them and Malinta. Glusman was ordered to reconnoitre by ambulance to determine the possibilities of his getting through. Reaching the injured men proved impossible at that time and it was not until the night of 7 May, the day after the capitulation of Corregidor, that he was able to reach Monkey Point. On arrival there he found about forty casualties, but "all were well bedded down and cared for, their wounds dressed, a messing system provided and Doctor Glusman is loud in his praises of Chief Pharmacist's Mate McDougall and Pharmacist's Mate Third Class Crawford, both of whom had performed valiantly and proficiently to such an extent that he found very little to do".[3] The next day Glusman was able to get the wounded transported to the hospital. He was then assigned by his superior officers (American doctors were still in charge of medical activities) to duty in a medical ward at the station hospital at Fort Mills.

About 13 May 1942 Glusman was ordered to the Ninety-Second Garage, which was being used as a concentration camp for prisoners. Two days later he developed a fever and was returned as a patient to the hospital, where he remained on the sick list for four days. He was then ordered back to the concentration camp with the medical group of about sixty doctors, dental officers, and corpsmen representing

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3. Quoted in Glusman, p. 10.

the United States Army and Navy and the Philippine Army. On 8 June, the closing date of Commander Hayes' story, Glusman was on ward duty at the station hospital at Fort Mills.

Jeremiah Valentine Crews

Jeremiah Valentine Crews, Pharmacist, USN, on duty at the Regimental Hospital, Fourth Marines, Shanghai, China, before hostilities began, had charge of a large quantity of medical equipment during the retreat.[4] When in November 1941 the Fourth Marines were evacuated from Shanghai to Olongapo, Philippine Islands, Crews was responsible for moving the forty cubic tons of medical equipment and and supplies. He dismantled the Regimental Hospital; transferred the medical administrative office facilities and records, and upon arrival in the Philippines reestablished the hospital.

Immediately following the outbreak of hostilities in December 1941, he moved the equipment from the naval station at Olongapo to Riverside Cabaret. When this area was heavily hit, Crews was the first to reach the wounded. He and his men rendered first aid and when litters arrived, dispatched the most serious cases to the hospital.

Having decided to move the hospital to a more protected area, the regimental surgeon sent Crews to make a reconnaissance to the east. The site he selected (seven kilometers east of the Barrio)

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4. "The Crews Narrative History", 2 July 1942, prepared by Comdr. Thomas H. Hayes, (MC), USN, while a prisoner on Corregidor, p. 1. MS Hospital Corps Archives.

was promptly approved by the commanding officer and by noon the following day the hospital was ready for patients. Afterwards the medical facilities were forced by increasing enemy pressure to move every two or three days, finally settling in the hills east of Olongapo. On the morning of 24 December Crews left with the regimental surgeon for the defense sector of the Fourth Marines in Bataan. From this date on he was attached to Headquarters, Fourth Marines, and served throughout the campaign with the regimental surgeon.

Robert Brownell Greenman

When the gunboat USS OAHU left Shanghai 29 November 1941 in the general evacuation of China, Lt. Robert Brownell Greenman, (MC), USN, was among those aboard. The vessel had reached anchorage off Manila when hostilities began and spent the next few days moving about the bay to avoid hits. About 28 December, after the attacks became extremely heavy, the OAHU anchored near Monkey Point on Corregidor and the personnel, after joining with the crew of the USS LUZON, went ashore to dig in. The days were spent in fox holes, the nights aboard ship, with Greenman carrying on his medical routine at all times.

After the fall of Bataan the tempo of war increased daily for the ships in the bay and Greenman began to get numerous casualties. By 8 April the situation was so serious that the ship had to be evacuated and the crew became part of the beach defense forces on the island containing Fort Hughes. Greenman saved all his

medical supplies from the ship and established a sick bay at Battery Craighill, manned by Navy personnel.[5] Following the surrender of Fort Hughes, Greenman was taken to the ninety-second garage concentration camp on Corregidor along with Fort Hughes prisoners. There he joined the other medical officers in the care of the sick and wounded.

Commander Hayes summarized the medical situation in the Manila Bay area as follows:

> One of the outstanding accomplishments, and one which could be easily overlooked, was the care of hundreds of cases including malaria, dysentery, food deficiency diseases and upper respiratory infections cared for in the field under the trying conditions of modern warfare as experienced in this theatre of war, thus carrying out the best traditions of the Corps in keeping as many men behind the guns as many days as possible, and conserving the much needed hospital beds for the emergency casualties which had been increasing daily.
>
> It should be noted here that this function was performed by all of our aid stations to the point that less than one point four per cent (1.4%) of our sick (medical) were hospitalized and only those present during and after the evacuation from Bataan can realize to what degree this was no mean achievement.[6]

## The USS CANOPUS

While the Battles of Bataan and Corregidor raged, medical personnel aboard the ships in Manila Bay were encountering similar

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5. "The Greenman Narrative History", 21 June 1942, prepared by Comdr. Thomas H. Hayes, (MC), USN, while a prisoner on Corregidor, p. 5. MS Hospital Corps Archives.

6. "The George Theodore Ferguson Narrative History", 8 June 1942, prepared by Comdr. Thomas H. Hayes, (MC),USN, while a prisoner on Corregidor, p. 5. MS Hospital Corps Archives.

difficulties in carrying on their duties. The USS CANOPUS, submarine tender anchored off Cavite 8 December 1941, cruised over Manila Bay to avoid attack and later anchored in Mariveles Bay. There she was bombed 29 December, resulting in many casualties. These were hurried to makeshift dressing stations. When a fragmentation bomb struck the smoke stack, stretcher parties from ashore boarded the ship "almost before the dust had settled" and carried the fifteen wounded men to dressing stations ashore. As a result of the intense aerial attacks the CANOPUS became untenable in daylight, so the crew moved ashore, taking over a storage tunnel. Although the vessel was repaired at night, she was too slow to escape and had to be scuttled in Mariveles Bay to prevent her falling into enemy hands. Her crew joined the defenders of Corregidor.[7]

The USS QUAIL

The USS QUAIL, a minesweeper, was also caught in Manila Bay and had to be scuttled the night of 6 May, the day Corregidor fell. George William Head, Chief Pharmacist's Mate, USN, received the silver star for his performance of duty before the QUAIL was abandoned and during the flight of the captain and 17 others to Australia. Lt. Comdr. John H. Morrill, USN, Commanding Officer of the QUAIL, said of Head in his recommendation:

> Throughout the war and in many trying circumstances, this man kept the crew of the USS Quail in excellent

7. Captain E. L. Sackett, Letter of 12 May 1943, to relatives of officers and men of the USS CANOPUS. MS Hospital Corps Archives.

health, mostly in an independent duty status as there was no regular medical officer assigned to the unit to which we were attached. He also contributed greatly to their morale, encouraging the brave to perform their duties efficiently under severe enemy air and artillery attacks. In the final stages of the seige of Corregidor, he was many times called upon for additional duties ashore, aiding the medical officers of the forts in caring for the wounded.

On one occasion at Fort Hughes, near the last hours before surrender, he took complete charge of the first-aid and preliminary treatment of badly injured men, due to the medical officers themselves being injured.

When about to be captured by the enemy, he voluntarily chose to attempt to escape, even though it was explained to him that it was extremely dangerous for him to do so. In attendance upon the 15 other men and two officers in a small boat on a 2,000-mile journey over a period of 31 days, he not only kept all members in good health, without a single instance of serious illness, but he also acted as dietician, inspected and treated all fresh water and food, and was at all times an asset to morale.[8]

The QUAIL was scuttled off Caballo Island, Manila Bay, 6 May. Morrill, Head, and the others obtained a 36-foot motor launch, which they managed to hide during the day of 6 May. That night they escaped from Manila Bay and on 6 June 1942 arrived in Darwin.

## Netherlands East Indies

Prior to the attack on Pearl Harbor, part of the United States Asiatic Fleet had put into the oil ports of Borneo. When the fall of the Philippines became imminent, these cruisers and destroyers steamed north to convoy non-combatant ships from the danger area.

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8. Navy Department Press Release, 21 Aug 1942.

Page 11 missing

Adm. Thomas C. Hart moved his headquarters from Cavite to Surabaya, as Java became the center of resistence to the southward advance of the enemy. In January and February 1942 several bitter battles were fought in the waters between the Philippines and Australia, with the Japanese continuing to advance. The USS HOUSTON, USS MARBLEHEAD, USS LANGLEY, and USS PECOS were among the gallent American ships participating in these actions.

## The USS HOUSTON

The crew of the USS HOUSTON received a Presidential Unit Citation for outstanding performance against enemy forces in the Southwest Pacific from 7 December 1941 to 28 February 1942. Admiral Hart's recommendation read in part:

> On February 4, while with other U. S. and Dutch ships, the Houston successfully dodged five salvos of bombs, each from nine-plane squadrons of large bombers. Unluckily she was hit by one bomb, of the fifth salvo, which was dropped late and struck at a considerable distance from the rest of the salvo. It was a heavy bomb and ruined the after 8 - inch turret, the main radio station, and cut the main deck half in two. The personnel casualties were high; 60 were killed. Despite this damage the ship kept in service...
>
> On February 28 she again put to sea with an Australian cruiser and was lost that night under circumstances unknown. The available information indicated that the two ships were engaged by Japanese cruisers accompanied by destroyers or submarines and that the Houston went down through underwater damage. She is said to have continued the fight after her main deck was awash. The ship sailed with all personnel knowing that the chances were not good, but nevertheless in high spirits and determined.[9]

Survivors of the HOUSTON later revealed that she went down 1 March 1942 in Sunda Straits. During the entire period of war duty

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9. Navy Department Press Release, 31 Dec. 1942.

the medical department of the HOUSTON, which included 18 corpsmen, was busily occupied with either routine or emergency functions. Medical supplies were adequate, there were no outbreaks of disease, and only one case of neuropsychiatric disturbance occurred during the period of combat. Of a crew of 1,003 officers and men, 368 survived the sinking of the HOUSTON, but 71 of these later died in camp from diseases incurred while prisoners. "The majority of the survivors were picked up by Japanese rescue crews, but survivor (Lieutenant Commander Hamlin) noted that the severely wounded were abandoned by the Japanese. The survivors picked up, thus, had few if any wounds. One man was burned about both arms but survived although he received no medical care."

During the process of abandoning ship, the HOUSTON's life rafts and floats worked well, saving a number of lives. Balsa wood floats were considered best, for although broken up considerably by enemy shelling, they still floated. Kapok - type life jackets were most effective. While in the prison camp, medical supplies and drugs were almost completely lacking until 1944 when a few Red Cross stores arrived. "The Japanese did not even permit the prisoners to buy drugs with their own money."[10]

## The USS MARBLEHEAD

The USS MARBLEHEAD joined in battle with the enemy on 4

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10. Lt. Comdr. Hamlin, USN, as told to Lt. Comdr. J. S. Thiemeyer, Jr., (MC), USN, 28 Sept. 1945. MS in Administrative History Section, BuMed, Navy Dept.

February 1942, receiving two direct bomb hits at 1027. The damage was so severe that the ship had to be steered by her engines. The executive officer, hurt seriously in the attack, was moved to the conning tower for first aid. At 1300 the ship's doctor reported to the officer of the deck the names of six officers and men killed in action. Ten, two of whom died before midnight, were named as critically wounded. In addition, three officers and about 32 men received serious burns or injuries and about 40 others received minor burns or injuries. All were treated by medical department personnel.[11]

On 6 February 1942 the MARBLEHEAD put in at Tjilatjap, Java, and at 1345 commenced transferring the wounded to the hospital train, which was waiting at the dock when the ship arrived, for transportation to evacuation hospital, Djokjakarta, Java. The ship's log lists the names of the 21 who were transferred. Thirty-two officers and men were transferred by Netherlands Army trucks, also waiting at the dock, to the local hospital, Tjilatjap, Java.

At 1420 the crew of the MARBLEHEAD transferred the bodies of twelve deceased personnel to the covered pier adjacent to the ship, draping their caskets with a United States flag and establishing a guard of honor by United States Marines from the USS HOUSTON preparatory to early morning funeral ceremonies on 7 February. The body of one casualty could not be removed from a flooded compartment. The dead were buried in Europeesche Begrafplaats, Tjilatjap, in marked graves. The graves numbered 1 to 46 were occupied by men from

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11. USS MARBLEHEAD, log book, 4 Feb. 1942.

the HOUSTON; numbers 47 to 59 by the men of the MARBLEHEAD.[12]

Corydon M. Wassell

Among the doctors in the Netherlands East Indies at the time of these actions was Lt. Comdr. Corydon M. Wassell, USNR, who arrived at Surabaya, Java, 27 January 1942, as a member of Admiral Hart's staff. There were good Dutch hospitals in Java, with Dutch and Javanese doctors and nurses, where American wounded could be cared for. To Wassell fell the task of assigning patients to these institutions. Their staffs then assumed all responsibility for treatment and the American doctor wisely did not interfere. He only visited the wards, talking with the men and giving them American-made articles to bolster morale: "To those mutilated, suffering, and nerve shattered men, the doctor with his gifts of candy, ice cream, soap, and -final touch of thoughtfulness- long Chinese cigarette holders which would allow the comforts of a smoke to men whose burned arms and hands were swathed too heavily in bandages to let them hold a cigarette, must have seemed like a kindly American uncle." [13]

The task of selecting a site for the burial of the American dead fell on Wassell and the chaplain of the USS HOUSTON. They chose a corner of the cemetery in Djokjakarta and the burials were made as noted in the USS MARBLEHEAD's log above.

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12. USS MARBLEHEAD, log book, 7 Feb. 1942.

13. Charles M. Oman, Doctors Aweigh, p. 19. Cited hereafter as Oman, p. 19.

During the month of February it became clear that the enemy's pincers would soon reach out and close on Java. Orders came from Admiral Hart to evacuate the wounded in Surabaya to a town in the hills. Medical supplies there were scanty and Wassell was forced to use substitutes for such items as boric acid and cotton flannel. He went about the island buying not only medical supplies but every available tin of food on the storekeepers' shelves. The latter was desperately needed by men leaving Java by air and water in the general evacuation now in progress.

Then Admiral Hart ordered Wassell to evacuate from the island "all wounded who can stand a hard trip". Wassell sorted the patients accordingly, finding ten men, including Lt. Comdr. William Goggins, executive officer of the USS MARBLEHEAD, whose state was so serious that transporting them was not to be considered. Dr. Wassell elected to remain behind with the ten and wait for the Japanese to overcome them.

Left to his own devices, Wassell began to search for suitable means of getting the men to a place of safety. Just when it looked as if all efforts would fail, a British colonel organized a motor caravan of anti-aircraft batteries and agreed to let Wassell's patients ride the vehicles to Tjilatjap. With the aid of Dutch hospital corpsmen, Wassell prepared the wounded for travel and made them comfortable as possible. Finally, after driving all night and part of the next day, the convoy reached Tjilatjap.[14]

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14. Wassell's vivid description of this flight may be found in Oman, pp. 24-25.

In the harbor a small Dutch coastal vessel was making ready to put out. Although many of the ships that had sailed recently had been sunk by enemy aerial attack, nearly 800 persons crowded into the space normally occupied by 150 passengers. One of Wassell's ten patients had been lost in the flight to Tjilatjap. He found space aboard ship for the other nine and laid them on the deck. The little ship was heavily attacked the first day out and had to put in for repairs. Having felt the force of enemy bombs, 80 percent of those aboard decided not to continue the voyage. Wassell gave each patient the choice of remaining to be captured or continuing the journey on the one chance out of a thousand of reaching Australia. All stuck by the ship and finally reached Perth 15 March 1942. In an Australian hospital the nine Americans who had been miraculously brought out of Java by a Navy doctor made their recovery.[15]

During March Allied submarines ran frequently from Australian ports, carrying food, drugs, and what supplies could be assembled to the men on Bataan and Corregidor. At the storehouse in Freemantle, Wassell and two chief pharmacists set up a base for medical supplies. They scoured Australia for every vitamin pill and preparation, every grain of morphine and quinine that could be purchased or commandeered. These they had ready for the submarines when they started north on their relief missions. Thus Wassell and the other Navy medical men continued to render what aid they could to American and Allied personnel until the close of the retreat from the Philippines and the

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15. Oman, p. 27.

Netherlands East Indies. President Franklin D. Roosevelt paid special tribute to Wassell's skill and courage, telling his story in a radio fireside chat on 29 April 1942.[16]

## USS LANGLEY

Another of the heroic United States ships sent to the bottom in the fighting around Java was the seaplane tender LANGLEY. Of the 15 hospital corpsmen attached to the ship at that time only eight survived.[17] Two American destroyers picked up a total of 450 survivors, but these were not destined to escape the war zone easily even then. The two destroyers were ordered to Christmas Island, 250 miles south of Java, to turn the survivors over to the oiler USS PECOS. Lt. Joseph L. Yon, (MC), USN, medical officer of the PECOS, tells the story of that vessel's attempted flight.

## USS PECOS

The PECOS, which was the last source of fuel for the ships around Tjilatjap, remained in that area until virtually all her fuel had been expended. She was then ordered to intercept the two destroyers on her way out. As soon as the PECOS arrived at the place of rendezvous, enemy planes attacked, but all three vessels escaped by steaming into a sudden rain squall. At 0400 the next morning the survivors were transferred under extremely adverse conditions - heavy

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16. Quoted in William H. Fetridge, The Navy Reader, pp. 26 - 27.
17. Last roster report received from USS LANGLEY, 1 Feb. 1942. MS Hospital Corps Archives.

swells and no lights. The boatswain had an especially difficult task holding the motor launch steady in the heavy sea while lines were secured to Stokes stretchers and the wounded hauled aboard. All of the 450 survivors had been transferred by 0630 and the PECOS again got under way.

"Our job then," says the ship's medical officer, "was to head for the coast of Australia and land the Langley's men. Many of them were injured. Practically all were suffering from shock, exposure, and exhaustion, from being bombed and in the water before the destroyers picked them up. Many had no clothes except those that the crews of the destroyers had contributed." [18]

In the cramped sick bay, Lt. Joseph L. Yon, (MC), USN, set to work to classify the injured men and to assign his five hospital corpsmen to the job of helping him treat those requiring immediate attention. Medical personnel went to work to treat burns, overcome shock, attend to those urgently in need of surgery, set fractures, and prevent the other injuries from becoming worse. In less than six hours after this work began the ship's siren warned all hands below decks that enemy planes had returned. The first bomb hit within a minute, tore a great hole amidships, and started a fire. Before the attacks were over the PECOS had been hit five times, with six near-misses, and she began to settle at the bow. Men injured in the forward part of the ship could not get back to the main dressing station. The pharmacist's mate in charge of the forward dressing station had to

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18. Quoted in Oman, p. 30.

carry on alone.

Sailors struggled down the ladder, carrying burned and bleeding comrades, until the sick bay was filled. The ship was listing badly and the sick bay itself suffered great damage. Tile from the operating room began to chip and fly about. The doctor and the chief pharmacist's mate who was assisting him lifted the patient onto the deck and knelt beside him. The chief held him steady while the doctor worked. Yon described the experience:

> When I heard the machine guns and the anti-aircraft guns begin to rattle, I knew that we had about thirty seconds before we either had another hit or a near-miss. We would give them about ten seconds and then drop alongside the patient, the chief on one side and I on the other, and wait for the ship to jump. From where we were in the sick bay, it was hard to tell whether it was a hit or a near-miss....As soon as the ship ceased shuddering, we got onto our knees and began to work on the injured until the next bomb was due. Often this was less than a minute.[19]

After four hours of this, orders came to abandon ship. The injured officers and men were carried from the sick bay, up the slanting deck to the starboard side of the ship. Kapok-filled mattresses were removed from the officers' berths, and the most severely injured men were lashed to these and lowered over the side. A well man went with each injured one, to care for him.

One disadvantage of steel ships is that they offer so little floatable wreckage. In order to compensate for this the men tore down the doors and broke out the wooden panels. Before sailing from Tjilatjap the Captain had taken aboard a quantity of lengths of large

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19. Quoted in Oman, pp. 32-33.

bamboo. One ten-foot length would support four men.

The PECOS went down at 1355, with no other vessel in the vicinity. Food and water were extremely scarce. The doctor had emptied the scuttlebutt in the Captain's cabin into containers which he gave the injured men as they went over the side.

Dusk was settling when a ship appeared on the horizon. In response to a flare set off by the men in the water, the vessel, which turned out to be one of the destroyers which had given the PECOS and the LANGLEY survivors that morning, approached and pulled the survivors aboard. Yon pictured the situation aboard the rescue vessel:

> When I got aboard the destroyer, there being no medical officer aboard, the chief pharmacist's mate had all his medical gear laid out in the officers' wardroom; and on the wardroom table we went to work. It was about one o'clock the next morning when all the injured were taken care of and placed in the bunks, readily given up by members of the destroyer's crew.
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> The destroyer had been making top speed away from the area in which the Pecos had gone down, and those who have been at sea can visualize how one of these small, slim ships, doing better than thirty knots in heavy swells, will roll and pitch. But as I made my last round to see that all the injured were asleep, not a man murmured. A destroyer with three hundred and fifty passengers aboard in heavy weather is not the most comfortable ship in the Navy, but as I curled up alongside the other sailors on the deck, around one of the warm stacks, it was the closest to heaven I had ever been.
>
> And that was how we ultimately came to Perth....[20]

The Japanese continued their advance through the Netherlands East Indies until all Allied forces there were overcome. Navy medical men worked throughout the long retreat to keep the fighting

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20. Quoted in Oman, p. 35.

men at their posts, care for casualties, and rescue survivors. Not until the Japanese were stopped in the Battles of Coral Sea and Midway, were the Allies able to assume the offensive and Navy Medical Department personnel to operate in an organized manner according to carefully formed plans of their own choosing.

# MANILA BAY AND THE NETHERLANDS EAST INDIES

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# PART II

# THE ALLIED OFFENSIVE IN THE PACIFIC

# CHAPTER III

# THE SOLOMONS

## Section 1 Guadalcanal

### Period of Preparation

Allied forces won important defensive victories in the battles of Coral Sea and Midway in May and June 1942, battles in which the advance of the enemy to the south and east was temporarily stopped. However, the task of consolidating these gains and driving the enemy from the supply lines to Australia did not begin until 7 August 1942 with the landings in the Solomons. The decision to make Tulagi the principal objective in the Solomons was reached as early as April 1942, but preparation for the occupation of this area moved slowly. On 4 July 1942, however, the Japanese landed a large force on Guadalcanal, and a few days later our reconnaissance planes observed that a landing field was being constructed on the north coast of the island not far from Lunga Point. As the operation of land-based planes from Guadalcanal would immediately imperil our control of the New Hebrides and New Caledonia, the necessity of our regaining that island became increasingly apparent.

The new command created to conduct this offensive was headed by Vice Admiral Robert L. Ghormley, who was ordered to attack as soon as practicable. The occupation forces, commanded

by Major General Alexander Vandegrift, were the First Marine Division reinforced by the Second Marines, the First Raider Battalion, and the Third Defense Battalion.[1] Meantime, American forces were already enroute to the scene of action. The first echelon of the First Marine Division reached New Zealand 14 June 1942 and by the last of June the mobilization of task forces of warships was well under way at Wellington, San Diego, and Pearl Harbor.

In preparation for duty beyond the seas, the entire First Division had been reviewed from a medical standpoint and all personnel not physically fit (active venereal disease, patients in hospitals, and those individuals not physically equipped for tropical duty) were declared unfit for foreign duty. All hands received full immunizing doses of smallpox, yellow fever, and typhoid vaccines, plus tetanus toxoid.

Although sanitation facilities were very crude in the tents and huts set up by the first echelon in New Zealand, there were few sick. The 500-bed New Zealand Casualty Clearing Hospital at Aotea Quay was assigned to the division and staffed by B Company, First Medical Battalion. Acute surgical emergencies were cared for by division staff surgeons at the Wellington Public Hospital, an arrangement which continued in operation until the

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1. Office of Naval Intelligence, Solomon Islands Campaign, I, pp.1-3. Cited hereafter as O.N.I., Solomons, I, pp. 1-3.

arrival of the Sixth Mobile Base Hospital in September 1942.

The outstanding health problem during the period between departure from the United States and arrival at Guadalcanal was the lack of food aboard the USS M. V. ERICSSON. Many men lost from 16 to 23 pounds during the trip without any contributing illness. Only two meals were served daily and one of these was limited to soup. The medical officers estimated the daily value of the rations as less than 1500 calories. "The bakery ran out of proper shortening ten days from San Francisco, and oil substitutes were used. These were believed to have been the cause of a diarrhea epidemic which affected about 40 percent of the command. Condemned eggs and rancid 'reprocessed' butter were brought back to the ship before sailing and would have been used had not a strong protest been made to the Captain."[2] Experiences of this type, along with crowded conditions and lack of facilities for exercise aboard ship, tended to reduce greatly the effectiveness of combat troops upon going ashore.

Prior to the landings in the Solomons, medical plans were completed for the combat care of 18,134 officers and men (First Marine Division, Second Marines, and First Marine Raider Battalion) for a 90 day period. An acute shortage of sulphanilamide was re-

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2. Commanding General, First Marine Division, Fleet Marine Force, "Final Report on Guadalcanal Operation," Phase I, Annex I, Medical Experience. MS in Historical Division, United States Marine Corps. Cited hereafter as "Final Report on Guadalcanal," Phase I, Annex I, Medical Experience.

lieved by obtaining 60 pounds of the powder from the Abbot Drug Company of New Zealand. Similarly, deficits in the number of Hospital Corps pouches were made up from New Zealand Army stores, as were deficits in identification tags.

At the time of departure from Wellington (22 July 1942) for a practice landing in the Fiji Islands, the medical personnel under the First Division Surgeon included: First Medical Battalion (less C and D Companies); A Company, Second Medical Battalion; the regimental sections of the combat groups and medical sections of the supporting groups.[3]

The following is the organization of Navy medical personnel serving with the Marines. First, there is the battalion aid station unit. This is composed of two medical officers and 20 hospital corpsmen attached to a battalion of approximately 900 combat troops. Three hospital corpsmen are detailed to each company as company aid men. The remainder of the hospital corpsmen and the medical officers comprise the actual aid station personnel. In addition, there are medical companies consisting of six medical officers and 80 hospital corpsmen, which may be assigned to any particular

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3. The reserve supplies delivered to the commanding officer of each of these groups for transportation to the combat area are listed in detail in "Medical Experience and Problems in the Guadalcanal Operation," Phase I, 26 June to 7 Aug. 1942. MS. in Administrative History Section Archives, Bureau of Medicine and Surgery, Navy Department. Cited hereafter as "Medical Experiences -- Guadalcanal," Phase I.

operation where combat troops are engaged. Each medical company is a separate entity capable of setting up a 72-bed hospital in the field. They are divided into three sections as regards their function, (1) collecting and sorting party, (2) the hospital section, and (3) the evacuation section.

The first medical personnel to land are the company aid men, who are a part of and closely follow the initial assault wave. They give first aid to such casualties as occur, and as the line moves inland, they maintain a position roughly 200 yards to the rear. By this time the main group of the battalion aid station has come ashore with a support wave of troops. The aid station equipment is set up and stretcher parties are sent out to bring in the wounded. As the assault line moves inland, the battalion aid station is moved forward to keep a position roughly 600 yards to the rear of the advancing forces. The collecting party, the advance unit of the medical company, has now landed along with mechanized equipment. Jeeps, rigged as ambulances, are sent forward to the advance battalion aid stations to evacuate casualties gathered there.[4]

The transports from Wellington made rendezvous with the remaining units of the task force at Koro in the Fijis on 26 July, and from then until 31 July the entire force, including supporting

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4. Eugene R. Hering, "The Role of the Hospital Corps in Amphibious Assault," Hospital Corps Quarterly, XVI (Jan. 1943), pp.14-15.

naval units, rehearsed the coming landing. The entire task force (TF62) then set out for the scene of action in company with its supporting carrier force (TF61). The American forces were embarked on seventeen transports, including four destroyer transports. Accompanying them were five cargo vessels, while the naval support group of the task force consisted of eight cruisers, fourteen destroyers exclusive of the APDs, and five mine sweepers. Task Force 61 consisted of three carriers - the SARATOGA, the ENTERPRISE, and the WASP; one battleship, the NORTH CAROLINA; and a force of cruisers and destroyers.[5]

Under low-hanging clouds the task force approached the Tulagi-Guadalcanal area. Before daylight on 7 August 1942 it split into two sections, one proceeding toward the Tulagi area, the other toward the larger island of Guadalcanal. Medical preparations had been made for this dual attack. Combat groups A and B, headed for Guadalcanal, were supported by A (less 2nd platoon), B, E, and H and S Medical Companies of the First Medical Battalion, plus their regimental and supporting group medical sections. One officer and ten corpsmen were detached from A Company, Second Medical Battalion, to support the First Parachute Battalion on Gavutu; the remainder of this company, First Medical Battalion, were to operate as a field hospital on Tulagi. In addition, a collecting section from D Com-

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5. Historical Division, United States Marine Corps, "The Guadalcanal Campaign August 1942 to February 1943," p. 12. MS in Historical Division, United States Marine Corps. Cited hereafter as Marine Historical Division, "Guadalcanal Campaign," p. 12.

pany, Second Medical Battalion, and First, Second, and Third Battalions of the Second Marines.[6]

Ashore in the Solomons, 7 - 9 August

The landing, details of which need not be given here, was largely uneventful from a medical point of view. Battalion and regimental medical sections carried only combat equipment plus extra morphine and sulpha drugs. "In some cases individual groups disregarded the letter of this order and overloaded their personnel with equipment in excess of this amount. This disregard of a carefully planned section of the operation order was to prove a serious handicap during the following forty-eight hours and contributed to the loss of small amounts of valuable medical supplies and much hardship to the medical personnel."[7]

The timing of the landing of medical companies, following combat groups, was well handled, and all medical companies hit the beach at approximately the same time, between 1030 and 1100 (H-hour was 0800). By that time the beach had been cleared and the unloading of ships had begun. A medical officer who was an eye witness to these stirring events described what happened with reference to his regiment:

> As dawn was breaking, we hit the beach west of the swiftly flowing Lunga River. On shore, Marines who had arri-

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6. "Medical Experience -- Guadalcanal," Phase I.

7. "Final Report on Guadalcanal," Phase II, Medical Annex H.

ved before us were guarding our flanks from sudden attack. As we jumped from landing boats and tank-lighters and waded ashore we entered what remained of a coconut grove, almost completely devastated by gunfire.

Unmolested by enemy air attack, every man and officer worked feverishly to unload the ships. They well knew that the safety of our lines might depend upon the amount of ammunition, food, and medical supplies brought ashore between dawn and dusk. With the small party left on board ship to supervise the unloading were pharmacist's mate, first class, Obed Loyal (Bunky) Davis from Decatur, Ill., and pharmacist's mate, second class, Raymond Ott (Bruno) Hartman from Linden, N. J. These two men who had skillfully prepared our outfit during the many months of training with the best equipment and drugs that could be supplied, came ashore at noon.

In the coconut grove, our Chief, Los Angeles - born James Cecil Kelso, ordered his men to establish a small temporary aid station. Ralph Blackwell from Bonne Terre, Mo., and James Louis (Spooky) Armstrong from Bad Axe, Mich., both pharmacist's mates, second class, immediately dragged some of our 10 cases of equipment from beneath stores of 81 millimeter shells that were beginning to pile up on the white, barbed-wire strewn beach....

The first night we received our unholy baptism of fire. Our battalion surgeon, Lt. Comdr. Lawrence E. Schuster, from the Quaker state, had directed the hospital corpsmen to keep their assignments: 2 to each company, 1 with the mortar platoon, 1 with the communications outfit, and the remaining 10 with headquarters company as a nucleus for a battalion aid station....

Through the still, midnight air came the spine-tingling, hushed murmur of distant planes.... Not far off shore lay the enemy waiting to fire on us with their big guns while we lay helplessly between the brilliantly illuminated piles of ammunition and gasoline on the shore and the grounded planes on Henderson Field. For an eternity they bombarded us. Our grove was in inferno.... But almost before the firing ceased, hospital corpsmen were out of their fox holes and crawling in the darkness to the side of wounded and dying comrades.

The cries for relief were quickly stilled with morphine given with steady hand and a calm, reassuring word. Battle dressings and tourniquets were skillfully applied. The mere presence of the pharmacist's mates, plus the knowledge that they knew what to do in emergencies, calmed the apprehensive Marines.[8]

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8. Edward L. Smith, "Still Bravely Singing," Hospital Corps Quarterly, XVII (Jan. 1944), pp. 3-5.

The first 24 hours were taken up with the slow advance through the jungle and along the shore. Medical companies were constantly in contact with the forward echelons. No collecting stations or field hospitals were set up as yet, for the operations order called for the evacuation of all casualties to go by way of the beach to the ships as long as they remained in the immediate vicinity.

Unloading the ships proved to be the principal difficulty encountered during the early part of the landing. At Wellington supplies had been placed aboard in the proper order for unloading, but the reloading at Koro "was done without the sanction or knowledge of the Division Medical supply section and all the reserve supplies carried by H & S Company, First Medical Battalion, were placed in the bottoms of the holes."[9] Some supplies, thus trapped, were never unloaded. This was especially serious in the case of refrigeration equipment, for most of the biologicals, including all that required refrigeration, were lost by spoiling.

At noon on 8 August a large formation (estimates very between 25 and 40 planes) of enemy torpedo bombers attacked the ships off Guadalcanal. The ships maneuvered to avoid hits and sent up a murderous fire, with the result that only one enemy plane escaped.

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9. "Final Report on Guadalcanal," Phase II, Medical Annex H.

But one of the falling aircraft crashed on the deck of the transport GEORGE F. ELLIOTT, setting the ship afire. The USS HULL undertook to tow the ELLIOTT to Beach RED, about 10 miles away, in the hope of unloading some of the cargo and equipment which remained undamaged. The effort was unsuccessful, however, and the fire spread until the ELLIOTT had to be abandoned.[10] The sinking of the ELLIOTT resulted in the loss of practically all medical supplies and equipment under the supervision of E Company, First Medical Battalion. The preparatory division of supplies had, however, been so well made that no shortage resulted. By dividing remaining supplies and using those captured from the enemy, it was possible to re-outfit this company and enable it to function as a field hospital within 48 hours after landing.[11]

During the night of 8-9 August the naval forces covering the landing were disposed between Guadalcanal and Florida islands, with patrols covering all entrances into the strait. At 0145 enemy flares were dropped from above the clouds and hostile ships appeared off Savo Island. "No more than half an hour elapsed from the time enemy ships appeared without warning around the southern corner of Savo Island till they ceased fire and passed back out to sea. In that short interval they crossed ahead of our southern cruiser

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10. O.N.I., Solomons, I, pp. 64-65.

11. "Final Report on Guadalcanal," Phase II, Medical Annex H.

group, putting the CANBERRA completely out of action within a minute or two and damaging the CHICAGO, they crossed astern of our northern group, battering our cruisers so badly that all three sank - the VINCENNES and QUINCY within an hour."[12]

Following this defeat, the Allied naval forces were withdrawn from the Guadalcanal area, leaving the land forces to care for their casualties alone. By this time (the evening of 9 August), however, regimental and battalion aid stations in both the combat groups and in the supporting groups had been established in their own areas. On Guadalcanal, B Company, First Medical Battalion, had begun the occupation of two wooden buildings in an area north of the airfield. The First Platoon of A Company and E Company, First Medical Battalion, were setting up tent hospitals in essentially the same area.

The casualties suffered in the landing on Gavutu were treated in aid stations and evacuated back to the ships in amphibious tractors. All medical supplies destined for Tulagi, with the exception of combat units actually carried by personnel, were lost. Available supplies were pooled under the supervision of the senior medical officer. Captured enemy supplies were added to these so that there was no real shortage in any of the essentials necessary for the first week or ten days, by which time it was possible to resupply them from the division depots on Guadalcanal. When the

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12. O.N.I. Solomons, II, p. 5.

naval forces departed on the night of 9 August, the physical occupation of Tulagi and Gavutu had been completed. A field hospital was operating in the area, staffed by A Company, Second Medical Battalion.[13]

## Preparing Defenses on Guadalcanal

Following the withdrawal of naval support, the Marines decided to suspend offensive ground operations and prepare defenses on Lunga Point, north shore of Guadalcanal. During the period of comparative quiet which ensued, the medical forces were able to set up in positions which, with a few minor changes, were maintained throughout the operation. B Company, First Medical Battalion, improved the wooden buildings northeast of the airport and D plus 3 day had a functioning Division Field Hospital. E Company, First Medical Battalion, was functioning as a tent hospital about five hundred yards east of the Division Field Hospital. All medical forces "dug in" literally. Foxholes were dug for emergency use while air raid shelters were constructed.

Sanitation of the areas was a tremendous problem. The enemy, apparently completely surprised by the attack, had left much equipment and refuse. This could not be burned because of the danger of aerial attack. All enemy facilities for the disposal of human

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13. "Medical Experience — Guadalcanal," Phase II.

excreta had to be destroyed and new fly proof latrines constructed.

For the first five days, all water came from the Lunga River and was chlorinated by hand by medical personnel. On 12 August a portable filtration chlorination plant was set up on the west bank of the Lunga. Although rated at a capacity of 6,000 gallons daily, it was made to turn out 12,000.

Constant patrolling, shelling from the sea, and repeated bombings resulted in some casualties even during periods of relative quiet. These were all given emergency treatment and dressings at the site of the injury. Corpsmen accompanied all patrols; and at least one medical officer accompanied any patrol of over two companies. The first action of the MATANIKAU, 19 August 1942, resulted in fifteen American casualties - 4 dead, 1 missing, and 10 wounded. These were evacuated by ramp and Higgins boat to the beach at Kukum and then by ambulance to the Division Field Hospital. From the landing until 21 August, the Division Field Hospital admitted a total of 172 patients; E Medical Company, 78; and A Medical Company, 12 from the First Marine Division reinforced. Two patients were evacuated by plane, but the regular evacuation of casualties by air did not begin until 3 September 1942.[14]

In the meantime, mopping up was completed on Tulagi.

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14. "Final Report on Guadalcanal," Phase III, Medical Annex.

Casualties received after the departure of friendly transports were small in number and were treated by A Company, Second Medical Battalion, which had established a hospital in the prison on Tulagi. Due to the absence of large streams on the tiny island, finding sufficient water w as a problem. In practice, wells, springs, and rainwater were the best sources, even though all water had to be chlorinated. Despite the complications of sniper fire, the burial of the dead w as completed by the end of the first week.[15]

## The Japanese Counterattack

At 0310 on 21 August 1942, the Marines near the mouth of the Ilu River were hit by a sudden Japanese mass attack when a column of tightly packed enemy troops attempted to overrun their positions. The momentum of the column carried as far as some of the American gun emplacements, but a vigorous counterattack by Marine reserves restored the positions. Then the enemy resorted to mortars and artillery, and the Americans replied with similar weapons. After daylight the Marines began an encircling movement, the result of which was the destruction of the enemy: "By 1700 the enemy force had ceased to exist. Fourteen wounded prisoners had been taken, and one had surrendered. Small broken groups had been able to get through our lines and into the interior, but of the approximately 1,000 men whom Ichiki (Colonel Kiyonō) had led,

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15. Ibid.

bravely, be it said, over 900 lay dead near the mouth of the Ilu River."[16] American casualties in this engagement were extremely light, the myth of an all-powerful Japanese superman had been exploded, and morale soared. The Americans had attacked; they had been attacked, and they had been successful in each case.

Although the enemy continued to send thousands of reinforcements to Guadalcanal and many bitter battles followed, tropical diseases, heat exhaustion, sunburn, filth, and flies caused more casualties thereafter than did the Japanese. Brigadier General Earl Maxwell, Chief Army Medical Officer on Guadalcanal, stated that eight out of every nine soldiers admitted to the hospitals were admitted for treatment of some disease rather than for wounds.[17]

Malaria, the worst of the offenders, did not appear clinically until two weeks after the landing. By the second week in September there were 48 cases in hospitals and hundreds more that would soon join them.

Suppressive treatment for malaria in the form of atabrine was begun by order dated 10 September 1942. "Although instructions for its proper use were put out as a Division order, it was impossible to get complete cooperation from officers and men in the distribution and ingestion of this valuable suppressive drug, even under bivouac

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16. Marine Historical Division, "Guadalcanal Campaign," p. 41.

17. Washington, D. C. News, 11 Aug. 1945.

conditions. This lack of supervision by the responsible line officers became apparent when hundreds of tablets were picked up by messmen following their distribution." The medical personnel were forced, inmost instances, to stand at mess lines and not only supervise the taking of the tablets but also look into the mouths of the recipients to see that they were swallowed. Quinine was used as a suppressive measure only in those cases in which atabrine was intolerable.[18]

As the perimeter of the defense zone was extended into the hot, shadeless ridges one to three miles from the shore line, sunburn and heat exhaustion became medical problems. In a few instances personnel intolerant to sunlight were transferred to other organizations. Salt tablets were issued to replace salt lost through excessive body perspiration. Water was carried by hand in five gallon cans to the front lines.

During the first weeks, while sanitary conditions about camp were not good, gastro-enteritis resulted in many non-effectives. With the subsidence of this malady, catarrhal fever and dengue, along with malaria, became the major problem. Fungus infection of the feet, groin, and inter-gluteal fold assumed minor importance. Lack of proper personal hygiene and loss of clothing contributed to this condition. Especially was the lack of socks, both in quantity

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18. "Medical Experience--Guadalcanal," Phase IV.

and quality, important in the incidence, progress, and treatment of this disease.[19]

Casualties resulting from enemy action, whether in defensive or offensive operations, were treated on the spot by corpsmen. Since the spot where a man was wounded usually remained under fire for a time thereafter, giving medical aid often required noteworthy devotion to duty. This is the story of a corpsman who performed his duties under extremely hazardous conditions:

> Hospital Apprentice, first class, Richard H. Painter, 18, of Detroit, Mich., accompanied a patrol which was pinned down by Jap machine gun fire. A Marine was seriously wounded and the call went down the line from man to man for a hospital corpsman. Painter ran through the hail of bullets to the side of the wounded man, stopped the flow of blood, and applied bandages. As he started to remove the Marine, Painter was shot in the leg. Without bothering to tend himself, he carried the Marine to safety on our front lines. Since stretchers were needed for others, Painter refused to get in one himself and hobbled back to the first-aid station. Then he could move no farther. An ambulance rushed him to the hospital in rear.[20]

Many corpsmen were forced to fight Japs while working to save the lives of their comrades. Harold McFann, Pharmacist's Mate, third class, had an experience of this type.

> On the evening of the first day McFann saw action in the islands he was with a group of Marines lying close to a road running down one of the mountain valleys of Guadalcanal to the sea. Down the road came a company of Japs. In the fight that ensued a wounded Marine fell near a gravely injured Jap. McFann went to the aid of the American and was treating

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19. Ibid.
20. Navy Department Press Release, "Heroic Navy Hospital Corpsmen Forget Selves to Aid Marines Under Fire," Hospital Corps Quarterly, XVIII (May 1944), p. 146.

him when one of the enemy crept up on them. This Jap had no pistol, but he pulled a knife and attempted to stab McFann from behind. The corpsman could not get his own pistol out but he wrenched the knife from his assailant and killed him with it. While this was going on the Jap lying near by, and apparently dying, started to crawl toward the wounded Marine to attack him. McFann intervened and used his pistol effectively to save his comrade.[21]

The sick reported at forward aid stations and were treated or evacuated to the hospital. The usual method of evacuation, developed early in the operation, was by hand-carried stretchers along the shortest trail or road to the rear. Casualties were then placed in the first available transportation - jeep, ammunition truck, or prime mover - and taken back a distance of five hundred to one thousand yards to be transferred to waiting ambulances, or taken directly to the hospital in their original transportation. The system was coordinated by the regimental medical officer of the engaged combat group. He also saw that medical supplies and equipment came forward to replace equipment sent back with patients.

It will be noted that this system did not use the collecting section from the medical companies as a collection station. This released medical personnel as stretcher bearers to be used in the advance aid stations, and was a product of necessity. It was found early in the operation that a litter squad of four men

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21. Charles M. Oman, Doctors Aweigh: The Story of the United States Navy Medical Corps in Action, p. 91.

was inadequate to carry one casualty by stretcher over the type of terrain encountered, particularly in the heat of a tropical day. It became the function of the collecting section personnel to act as litter squads, under the direction of the regimental surgeons, from the front lines back to the first available transportation. To reduce the distance of hand carrying, jeeps were sent well forward of the ambulances. Their small area, low center of gravity, and ability to travel in difficult terrain made them especially valuable in this evacuation system. With only slight alterations, the standard jeep could be made to carry three or four stretcher cases and one sitting case. The medical department did not, of course, have control over these vehicles and at times the lack of transportation made long hand carries necessary.

Early in the campaign the doctors adopted the policy of evacuating from the island any man who would not be fit for duty in ten days or two weeks. This evacuation was carried out by sea or by air. The Division Surgeon arranged the evacuation through the senior aviation surgeon for air evacuations and the division transport officer for those going by sea. The first transport plane, which would accommodate 18 cases on stretchers or 36 sitting cases, arrived 3 September 1942.[22]

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22. For an account of air evacuation from the medical viewpoint see Tom T. Flaherty, et al, "Evacuation of Wounded by Air From the Battle of Guadalcanal," U. S. Naval Medical Bulletin, XLI (July 1943), pp. 917-922.

The plane was met on the field by ambulances; patients were placed aboard, and within 15 minutes after landing the transport took off. Prior to this time, a few isolated cases had been evacuated by combat planes. By 18 September 1942 a total of 147 patients had left Guadalcanal by air. But evacuation by sea was still much more generally used, with 701 officers and men departing by this method by 18 September.[23]

## The Battle Tempo Increases

During September the Japanese redoubled their efforts to bomb the American forces off Guadalcanal and to put reinforcements ashore. Small night landings by cruisers and destroyers - the "Tokyo Express" - became increasingly prevalent throughout the month and into early October. This method of reinforcement proved unsatisfactory, however, because few men and no heavy materiel could be carried. Consequently, the enemy found it necessary to bring in large transports. A force of cruisers and destroyers, which probably intended to destroy Henderson Field, was thrown back in the Battle of Cape Esperance on the night of 11-12 October. Despite heavy losses, the Japanese came back later and shelled the field. By the morning of 15 October, only one bomber and 10 fighters were in condition to take to the air and they were unable to prevent a convoy of six transports from coming in. Before the action was

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23. "Medical Experience -- Guadalcanal," Phase IV.

concluded, an enemy force, estimated by General Vandegrift to number 16,000, had reached Guadalcanal.[24]

Frequent shelling of Henderson Field continued, as well as daily air attacks. Late in October there were strong Japanese land assaults. During November American submarines operating in the Solomons heavily damaged the "Tokyo Express" as it brought in reinforcements. Meantime, extremely powerful enemy surface forces were concentrating in the Rabaul-Buin area. Seven United States transports were scheduled to sail for Guadalcanal with needed reinforcements. "If Admiral Halsey's combatant forces could not protect them and simultaneously counter the new enemy offensive, we would be obliged to retire from the Solomons, thus jeopardizing the entire Allied position in the South Pacific."[25] In the great naval Battle of Guadalcanal (11-15 November 1942) the enemy formations approaching the island were broken and despite heavy American losses the hold in the Solomons was maintained.

## Jungle Medicine

The months of September, October, and November were thus a period of intense activity for the medical personnel on Guadalcanal. The arrival of the Seventh Marines, reinforced, on 19 September gave the First Division an additional regiment of troops and a completely

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24. O.N.I., Solomons, VI, pp. 1-2.

25. Ibid.

equipped medical company. In spite of an initiation by naval gunfire on their first night ashore and repeated bombardments from the air, the medical company was operating a tent hospital just west of the Lunga River within 48 hours. By 10 December 1942 the total American personnel on Guadalcanal exceeded 45,000. With few exceptions it became the problem of the Medical Supply Officer of the First Division to obtain and distribute medical supplies to this entire group.

As personnel increased in numbers, more water was needed to assure an adequate supply for all hands. The original chlorination unit on the east bank of the Lunga was replaced by a mobile unit with a daily capacity of 30,000 gallons. A total of six portable units, each capable of chlorinating 12,000 gallons a day, was set up at different points about the island. Headquarters of the Second Marines set up a distillation plant for water on Tulagi.

The food situation on Guadalcanal gradually improved as the operation continued. At first, captured enemy supplies marked the difference between a starvation diet and one well above that point. Food actually spoiled was condemned, but hunger tempered the judgment of medical officers. As supplies arrived by ship the diet became adequate in every way, and no cases of food deficiency diseases were reported. With equipment for proper preparation of food lacking in many groups, field and mess cooks showed marked ingenuity in making workable equipment from captured material. "Had the enemy taken the time to destroy these ration dumps and

their equipment, the outcome of this operation might have been a tragic one."[26]

With the exception of a few items, medical supplies were adequate on Guadalcanal throughout the campaign. Deficiencies were rapidly corrected by flying in needed supplies from the Base Depot at Noumea, New Caledonia. After the landing, this depot furnished all supplies except anti-malarial drugs, which were forwarded by the Malaria Control Unit, South Pacific Area. The First Division medical section on the island was able to fill requisitions despite the fact that many of the new units arrived with only a few days' supplies. The Fourth Replacement Battalion was landed without any reserve supplies and the Eighth Regiment arrived with field units only. The Army was supplied from the First Marine Division reserves for the first four weeks of their action until the Army supply section arrived to take over. Navy construction units were provided with their own medical sections, and the Division Medical Supply Officer was required to issue only supplementary supplies. Aviation units were in the same category as the construction units. On being withdrawn from the island during December 1942, the First Marine Division left all their supplies with those units remaining on the island.

During October and November there was a steady stream of

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26. "Medical Experience--Guadalcanal," Phase V, p. 1.

surgical cases resulting from naval and air bombardment, patrolling, raiding, and defensive and offensive operations. The situation was unique in that patients operated on had to be evacuated hundreds of miles before reaching the nearest base hospital. The tent and field hospitals were within range of enemy artillery as well as of aerial bombs at all times. The operating was done in tents (except at the Division Field Hospital, which had wooden buildings), always above ground, and the recovery and surgical wards were also under canvas or in wooden buildings.

The control of shock was a prerequisite to successful surgery. This was begun in the advance aid stations by a liberal use of morphia, the splinting of fractures, and the administering of blood plasma. Intravenous fluids and plasma were used extensively on the admission of prospective surgical patients. Use of sulfonamides locally and orally was routine in the advance aid stations. Gas gangrene was seen only twice and no cases of tetanus were reported. "It is believed that with this very early use of sulfonamides, infection of war wounds and resulting deaths were the lowest in military-medical experience."[27]

The psychoneuroses and war neuroses were evacuated at once, if severe. Two groups of this type of case were treated on the island by a few days' rest in the sick bay area until acute

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27. "Medical Experience--Guadalcanal," Phase V, p. 3.

symptoms had subsided and then they were transferred to the quartermaster and used as a labor unit. It is the feeling of the medical officers in charge of these groups that the results were excellent. Approximately 75 men were so treated and made available for useful and necessary labor, which in turn released an equal number of men for front line combat duty.

Malaria, of which a fairly detailed account follows, was by far the most prevalent disease encountered throughout the Solomons campaign. The table below shows the number of admissions of First Marine Division personnel to the sick list and to the hospital for malaria:

| | Sick List | Malaria Cases Hospitalized |
|---|---|---|
| August | 900 | 22 |
| September | 1,724 | 239 |
| October | 2,630 | 1,941 |
| November | 2,413 | 3,212 |
| Total | 7,667 | 5,415 |

The original plan of ten days' hospitalization for malaria had to be abandoned in many cases because of the lack of beds. Emergency admissions from ships and combat areas took precedence, and hundreds of cases were treated in their organization areas or in the one convalescent hospital. Most cases were hospitalized during the acute phase, however, and discharged only for follow-up treatment. Although many malaria cases had to be evacuated, the majority

were returned to duty. Only three deaths from this disease occurred on the island.[28]

The First Marine Division and supporting troops are said to have landed at the beginning of the campaign in the area with "the highest malarial infected mosquito rate in the world."[29] Fortunately it was the time of the dry season and cases of malaria did not appear in numbers until approximately five weeks later. "This landing under combat was followed by a repetition of many of the same mistakes which were made in the first landings on malarious islands under non-combatant conditions. The situation from a malaria standpoint threatened to become a critical factor in the success of the operation. The military situation at Guadalcanal was saved by the use of atabrine."[30]

There were, unfortunately, many hindrances to the control of malaria on the island. Early in the operation, oiling of breeding areas within the camp proper was done by individual medical officers,

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28. "Medical Experience--Guadalcanal," Phase V, p. 6.

29. James J. Sapero, Commanding Officer, Malaria Control Unit, South Pacific. Quoted in "Medical Experience--Guadalcanal," Phase V, p. 4.

30. James J. Sapero, "Highlights on Epidemic Diseases Occurring in Military Forces in the Early Phases of the War in the South Pacific," p. 6 MS in Administrative History Section, Bureau of Medicine and Surgery, Navy Department.

none of whom had received any specialized training in preventive work. The Malaria Control Unit, consisting of one medical officer, an entomologist, an engineer, laboratory technicians, and trained enlisted personnel, later took over this and related work. Many areas could not be reached for oiling at all.

The lack of mosquito nets during the early phases was a contributing factor. Although each man had both head and bed nets on embarking at Wellington, a tremendous number were lost or discarded during the landing operation. Line personnel had little regard for the practical value of anti-mosquito equipment. One wrote:

> The equipment issued for protection against this pest was more of a hindrance than a help, for a man operating in the jungle, through steaming heat and pelting rain, far from any base of supplies and obliged to carry his every need on his back, had neither the time nor the strength to bother about mosquito bars and head nets and gloves. His attention and energy were directed to more immediately urgent things--the killing of the enemy, and the avoiding of being killed while so doing. Perforce he caught malaria, and in many cases became as surely a casualty as though he had been wounded. [31]

Large nets captured from the Japanese were used in the hospitals to screen patients and operating rooms. Insect repellants were not available.

Since it was a well known fact that the natives of the Solomons were reservoirs of malarial infection, the medical officers strongly opposed the introduction of native labor into the combat

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31. Marine Historical Division, "Guadalcanal Campaign," p. 85.

area of Guadalcanal. The Commanding General recognized the soundness of this advice but the gravity of the tactical situation required all the troops available on the firing line and the native labor was necessary to unload food, ammunition and gasoline from the ships. Infected natives, combined with the proper mosquito and non-infected residents, made a complete cycle. When the Japanese retreated toward Cape Esperance, the ill and severely wounded were left behind. The anopheles mosquito, heavily charged with germs from these sufferers, was taken over with the territory he inhabited; he feasted on the newcomers, and they in turn were infected.[32]

Suppressive treatment, begun by order 10 September 1942, was continued throughout the operation. Although the medical department made this treatment available to every man on the island, the outcome was very unsatisfactory. Line officers did not see that their men took their tablets; in fact they never fully accepted the responsibility for the dispensing of this medication when it was made available to them. The original atabrine dosage of one tablet twice daily (0.1 Gm.) twice a week, was later increased to every third day. The medical officers believed that less than ten percent of toxic results followed this mass usage of atabrine. Those cases in which toxic reactions did occur were given ten grains of quinine daily.

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32. Ibid.

The evacuation of all casualties in the area was arranged and carried out by the medical department of the First Marine Division. During October and November 1942 far more patients were evacuated by air than by sea. Occasionally the transfer of patients from hospital to plane was made while the field was actually under artillery fire. Despite this and many other attendant dangers, up to 1 December 2,879 patients were evacuated by air without casualties. The number of evacuations by sea up to 1 December was 1,040, making a total by both methods of 3,919.[33] Evacuation by sea required much handling of patients and was more difficult than by air. The former necessitated an ambulance ride, transfer to some form of shore to ship transportation (usually ramp or Higgins boat), and transfer to the ship by hoist. The type of hoist varied with the ship and was often an unsatisfactory improvisation.

## The Army Relieves the Marines

The order to evacuate the First Marine Division from Guadalcanal in December 1942 set in motion the plans to evacuate all sick personnel in hospitals. As far as possible, all walking cases were discharged to their organizations. The remainder were grouped according to their organizations and placed aboard the ship carrying that group. On 7 and 8 December, just before its departure, one regiment was studied by medical officers to determine

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33. "Medical Experience --Guadalcanal," Phase V, p. 7.

the number of effectives. Each man was interviewed separately and the doctors reached the conclusion that 34 percent of the regiment were unfit for any duty which might involve combat.[34]

During November more and more United States Army troops had entered Guadalcanal. After 9 December, when command of the area was turned over to Major General A. M. Patch, United States Army, the Marines played a less important role. Only the Second and Eighth Marines were still on the island. The Second Marines, which had made the first landing of the war in enemy territory, had been in constant action for a period of four months, and was badly shaken by disease, fatigue and casualties. The Eighth Marines, which had arrived from Samoa in November, had likewise suffered badly, for in addition to the inroads of malaria, it had begun to suffer from a persistent and disabling ailment acquired in Polynesia - filariasis, which the men knew by its Samoan name of "mumu." The full effect of this disease was not to make itself felt until some months later, but even at that time it was resulting in considerable loss of combat efficiency.[35]

The first three weeks after the relief of the First Marine Division were spent in consolidating the lines. On 4 January 1943 the Sixth Marine Regiment arrived and during the next two weeks gradually relieved the veteran Second and Eighth

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34. Ibid, Phase V, p. 8.

35. Marine Historical Division, "Guadalcanal Campaign," pp. 87-88.

Regiments. As the front lines were pushed farther to the west, signs of enemy demoralization became more and more unmistakable. Bivouacs were found to contain live enemy, badly starved and ill, living in the same dugouts with dead and decomposed bodies. The last days of the action were relatively quiet, with the enemy falling back rapidly on Cape Esperance.

The "Tokyo Express" had, meantime, stepped up activity, with large formations of destroyers and barges operating in the Guadalcanal area. The American command, expecting a large-scale attempt to reinforce the Japanese on Guadalcanal, concentrated more than 50 United States warships in the vicinity.

> However, it soon became apparent that the last three runs of the Tokyo Express had been for the purpose of evacuating the remaining strength of the enemy on Guadalcanal, and that the other Japanese activities noted had been for the purpose of covering this movement. On the night of 7 - 8 February, exactly 6 months after our landing in the Solomons, the enemy had completed his withdrawal. On the 8th U. S. advance units encountered no resistance save from patrols, and large quantities of supplies were captured....The campaign in the southern Solomons, except for incidental mopping up, was at an end. [36]

The cost to the American forces was small in comparison with that to the enemy. The Marine Corps units, which did most of the fighting, lost in men killed, died of wounds, and missing, a total of 137 officers, 3 warrant officers, and 1102 enlisted men.

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36. O.N.I., Solomons, VIII, pp. 49-50.

The wounded in the three categories totaled 178, 8, and 2,469. The First Marine Division suffered the heaviest of these casualties, 636 killed, 52 died of wounds, and 1,537 wounded. This division lost 3 medical officers and 11 hospital corpsmen killed in action. "Those who suffered from malaria acquired on the island have never been counted, but it is a safe assumption that almost every man who served on the island during the period of August 7 - February 9th fell victim to the disease sooner or later, and in a vast majority of cases the attacks were recurrent over a long period of months."[37]

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37. Marine Historical Division, "Guadalcanal Campaign," p. 1.

## Section 2 New Georgia

### The American Offensive Continues

The close of the bitter ground fighting on Guadalcanal came as a welcome surprise to both the men fighting on the island and those directing the battle. The fall of Guadalcanal did not, however, mean the imminent elimination of the enemy from the entire Solomon Islands area. By the middle of February, the enemy had a greater concentration of strength in the central and northern Solomons than ever before. It was believed that the Japanese would use the area around Shortland as the main base for future offensive operations.[38]

Shortly before the completion of the Munda airfield on New Georgia on 29 December 1942, the Japanese had begun to build a second air base near the mouth of the Vila River on Kolombangara Island. Since they were only about 200 miles away, the threat offered by these bases to the American position on Guadalcanal was obvious. During the months from December 1942 to February 1943, our fliers conducted more than 80 raids on enemy installations. Some of these raids promised spectacular success, yet none interrupted Japanese use of the fields for more than a day or two.

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38. Office of Naval Intelligence, Solomon Islands Campaign, IX, p. 32. Cited hereafter as O.N.I., Solomons, IX, p. 32.

One such raid, to illustrate medical problems involved was the bombardment of the Japanese shore installations on Kolombangara on the night of 12 - 13 May 1943. The cruisers USS HONOLULU, USS HELENA, and USS NASHVILLE, accompanied by five destroyers, made a run into the Kula Gulf - the results of which were disappointing.[39] During the action the NASHVILLE was rocked by an explosion in the number three turret. The casualties suffered included 7 immediate fatalities, 13 who died later, and 40 wounded. Medical personnel, assisted by stretcher bearers, ships officers, and Marines, cared for the casualties in a manner which drew the highest praise from Lt. Comdr. C. L. Storey, Senior Medical Officer.

Medical equipment aboard the NASHVILLE proved adequate in this severe test for both first-aid and definitive treatment. The change in location of the forward battle dressing station from the sick bay to the wardroom was especially beneficial. In treating the wounded, large amounts of blood plasma, burn ointment, morphine, glucose, and saline solution were used with good results.[40]

## The Russells

In order to deny the enemy the use of bases in the Central Solomons and to make them available for his own purposes, Admiral

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39. O.N.I., Solomons, IX, p. 73.

40. USS NASHVILLE, Medical Officer's Report in Action Report of the Bombardment of Shore Installations at Kolombangara, 12-13 May 1943. Reel A354. Planning Division, Bureau of Medicine, Navy Department.

Halsey determined to continue the American advance through the Solomons. Accordingly, immediately after the fall of Guadalcanal he set in motion plans for occupying the Russells, a small group of islands situated about 30 miles northwest of Guadalcanal. Unopposed landings were made in the Russells on 21 February 1943, and by the end of the month we had more than 9,000 men in the islands.[41]

On 13 March 1943, the advance echelon of Marine Aircraft Group Twenty One arrived at Banika, Russell Islands, to start a camp for the group. The remainder of the group arrived from Guadalcanal in April and all hands worked on the camp under the trying conditions which prevailed. Rain fell almost constantly, the mud was deep, and clothing mildewed. Food was scarce, both in quantity and variety. Despite this, men worked between 12 and 16 hours a day, week after week.

The group medical department, to quote the Senior Medical Officer, was "sorely taxed". Not only did it care for the sick and direct sanitation measures, but it had to erect its own Quonset huts and other buildings. A central dispensary was established in the camp and an auxiliary sick call and emergency aid station set up at the air strip. There was a dental office in the central dispensary. The group medical department personnel consisted of three doctors, two dentists, and 36 corpsmen attached to Headquarters Squadron. Each of the five aircraft

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41. O.N.I., Solomons, X, p. 2.

squadrons had 1 flight surgeon and 7 corpsmen.[42]

During April and May the medical department was confronted with the first crisis, which it met successfully. Malaria, acute infections, jaundice, acute gastro-enteritis, tonsilitis, pharyngitis, fungus infection, and infected sores were prevalent. Twenty-five men were evacuated in May.

With the air strip in full operation, casualties were heavy during June and July. On 7 June, for example, Lt. S. S. Logan lost his left foot while parachuting to earth. A Japanese pilot, who had failed to kill him by machine gunning, attempted to cut him down with his propeller. The same day Lt. H. E. Mattson collided head on with a Zero, suffering burns of his face and hands. A day later a fighter pilot suffered a fractured pelvis and multiple bruises when his parachute failed to open after he bailed out. The skull of another pilot was fractured when the brakes locked and his plane overturned as he landed. These and other casualties were cared for by the medical department until they could be evacuated to the rear.[43]

## Plans for New Georgia Operation

The New Georgia group of islands, 170 miles northwest of the Russells, was to be the next step in the Allied offensive.

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42. Marine Aircraft Group 21, Historical Supplement to Annual Sanitary Report, 1943, MS in Administrative History Section, Bureau of Medicine, Navy Department.

43. Marine Group 21, Sanitary Report, 1943.

The attack planned was a combined operation of Army, Navy, and Marine personnel, whose mission was to effect landings on Rendova, Vangunu, and New Georgia Islands, to seize the Munda airfield, and to drive the Japanese from New Georgia and adjacent islands. Guadalcanal and the Russells were to be the staging areas for the operations; but before they could be used effectively for this purpose, extensive logistic and medical preparations were necessary. Specifically, as regards the latter, the incidence of malaria on Guadalcanal would have to be reduced - otherwise, troops passing through enroute to the advanced areas would almost certainly contract the disease.

Captain Dearing's reports explain the situation on Guadalcanal between February and June 1943. Malaria continued to be, as it had been during the fighting, the major problem on the island. While the men were living in fox holes, the doctors had to depend on suppressive treatment to prevent the development of clinical malaria and keep the men effective. With the cessation of active fighting, the Malaria Control Commission, headed by Lieutenant Commander Sapero, launched an intensive mosquito control campaign. This resulted in a marked drop in the incidence of the disease.[44]

The fight, however, had to be continued. Malaria experts

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44. Capt. A. H. Dearing, (MC), USN, to Rear Adm. R. T. McIntire, 25 Feb. 1943. MS in Planning Division, Bureau of Medicine, Navy Department.

found that the control of the disease was an area problem. When control within the camps by each unit acting independently proved impractical, the Malaria Control Teams were placed directly under the Malaria Control Unit of the base, which in turn was under the Commanding General of the island. With reference to the New Georgia operation, Captain Dearing wrote: "The prevention of mosquito breeding in the combat area is a difficult proposition and although I am sure that we can do better than was done on Guadalcanal, I fear we will always have a high incidence of malaria amongst our combat troops." He offered as evidence the fact that in the 20 weeks following their removal from Guadalcanal to New Zealand the Marines of the Second Division developed 9,215 (63.8 percent of the entire division) cases of malaria. "One basic problem to solve," the report continued, "is the eradication of malaria from Guadalcanal. Such a project is comparable to the Canal Zone project of mosquito eradication. This is our staging area for troops moving to the front and if we are able to prevent them from contracting the disease at Guadalcanal so that they are malaria-free on reaching the combat zone, they will be much less likely to contract malaria during the fighting as the natives (seed bed) will not be in the combat area."[45]

Plans for the New Georgia operation were formulated in

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45. Dearing to McIntire, 27 July 1943, pp. 3-4.

May 1943 and D-day was set for 30 June. On that day, American forces were to make simultaneous landings at several points on Rendova Island and at Viru Harbor, Segi Point, and Wickham Anchorage on New Georgia. The principal attack on Munda was to come from Rendova. At the first opportunity, troops from there were to move across Roviana Lagoon and land east of Munda, capturing the airfield in a quick stroke. The attacking forces were divided into three major task forces.[46]

## The Landing

For several days immediately prior to the landing, numerous aerial and surface attacks were carried out against enemy installations. On 21 June, companies O and P of the Fourth Marine Raider Battalion made an unopposed landing at Segi Point, New Georgia, from the APD's DENT and WATERS. The reason for this landing in advance of the main operation was reports that the Japanese were moving into the Segi area.

The second landing took place at Rendova Harbor on the north side of Rendova Island. The transports came by way of Guadalcanal and, protected by low ceilings and poor visibility, arrived off the beachhead at dawn on 30 June. Despite considerable opposition, all troops except ship working details had been landed by

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46. For details of the plans and the composition of the task forces see O.N.I., Solomons, X, pp. 4-6.

0730. The 32-plane combat air patrol maintained by our fighters from Guadalcanal and the Russells successfully averted air attacks on the transports and cargo vessels until late afternoon. At that time torpedo planes destroyed Rear Admiral Turner's flagship, the USS McCAWLEY. Between 30 June and 31 July, 28,748 personnel (25,556 Army; 1,547 Navy; and 1,645 Marines) and approximately 30,000 tons of equipment were unloaded at Rendova.[47]

Among the first wave landing on Rendova were 600 members of the 24th Naval Construction Battalion. This was the first time Seabees had made a beachhead landing with the first wave of combat troops. Their task was to immediately prepare the beaches for the landing of small boats and to push roads into the jungles for the transportation of heavy equipment.

The Seabee camp was set up about 600 feet back of East Beach, which made it about 700 feet from the front line. The camp included a sick bay and hospital tents. Two 16 X 10 tents furnished with cots were used for a ward. No mattresses, pillows, or sheets were available. A 16 X 16 pyramidal tent served as a dispensary. With all roads impassable, patients for evacuation had to be transported by hand from the camp to the LST landing about one mile away, and this always in mud, shoe-top deep. "One patient with

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47. O.N.I., Solomons, X, pp. 13-14.

diagnosis, wound, gunshot, foot (self inflicted), was being transported to the landing on the back of a corpsman. Condition red sounded and he was off and away, beating the corpsman to the landing by a good fifty yards."[48]

On 2 July 1943 a force of 18 Japanese bombers unexpectedly attacked the area occupied by the Seabees, inflicting many casualties. Navy medical personnel, cooperating with the Army Medical Department, were busy for hours giving first-aid, while some of the men assisted aboard LST's and LCT's, which were used daily for evacuation. Under supervision of the chaplain, several hospital corpsmen and working parties from construction companies participated in identifying and burying the dead, a task which required three days.[49]

Meantime, a small landing had been made near the Onaiavisi Entrance to Roviana Lagoon, New Georgia. It was followed on 30 June by a landing in the Wickham Anchorage area of Vangunu Island.

The same day ACORN 7 went ashore at Segi Point, New Georgia, after short stops on Guadalcanal and the Russells. One half of the medical department accompanied the first wave, the

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48. Twenty-fourth U. S. Naval Construction Battalion, Historical Supplement to Annual Sanitary Report, 1943; p. 4. MS Administrative History Section, Bureau of Medicine, Navy Department.

49. 24th C. B., Sanitary Report, 1943, p. 4.

remaining personnel following with the second wave on 4 July 1943. Immediately on landing, the first wave established a first-aid station and three four-bed tent wards. After clearing a site on the edge of the jungle a half mile from the beach, the Seabees erected a 100' X 16' ward building. It was followed by the construction of a surgery and X-ray building, a record office, two additional ward buildings, a laundry, and a shower. Hospital corpsmen were assigned to the crash boat, crash truck, ambulance, and first-aid station on the airfield.[50]

The landing at Viru on New Georgia was delayed until 1 July 1943, and that at Rice Anchorage until 5 July. Heavy opposition was encountered at the latter and the destroyer USS STRONG was lost.

Japanese Reinforcements

While American forces were thus moving ashore in the New Georgia group, the Japanese were rushing in reinforcements by means of the "Tokyo Express." On 5 July the American task force commanded by Rear Admiral Walden L. Ainsworth aboard the USS HONOLULU received orders to proceed to the Kula Gulf to intercept the Japanese on their nightly run from Bougainville. In the engagement which followed, the Japanese losses were such as to

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50. Advanced Naval Base, ACORN 7, Annual Sanitary Report, 1943, p. 9. MS in Administrative History Section, Bureau of Medicine, Navy Department.

damage their supply line heavily, but the USS HELENA was sunk in the melee. After the other American vessels had departed, the destroyers USS NICHOLAS and USS RADFORD remained behind to pick up survivors.

> The NICHOLAS and RADFORD slowly nosed their way into the midst of the oil-soaked crew, who were scattered over an area a mile square. The men were singing and acting very much as if they were participating in a peacetime drill. Some were in life rafts; others were swimming separately; many had flash lights and were blowing whistles. For three hours the rescue operations were carried out almost in the direct path of enemy ships returning from Kula Gulf to their bases in the Buin-Faisi area. Constant reports of torpedoes, torpedo wakes, and submarines were received. With the approach of daylight enemy aircraft were reported to be in the vicinity.[51]

During the next two hours rescue operations continued under the most difficult circumstances. Four times the destroyers had to discontinue rescue operations, clear their sides, and prepare to engage the enemy. The ships were in such great danger that at daylight the squadron commander ordered them to retire from the area even though not all survivors had been taken aboard.[52] They proceeded to Tulagi, the medical personnel caring for the wounded and injured the best they could under crowded conditions.

The HELENA survivors left in the waters of the Kula Gulf found themselves at daylight in two widely separated groups. One

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51. O.N.I., Solomons, X, p. 27.

52. The USS NICHOLAS and USS RADFORD rescued 52 officers and 687 enlisted men of the USS HELENA's total complement of 77 officers and 1,110 enlisted men. O.N.I., Solomons, X, p. 28.

group of about 85 set out for New Georgia in three motor whale boats and were rescued by the USS GWIN and USS WOODWORTH on 7 July. The other survivors were scattered over a large area, floating or swimming with no other support in most cases than their life jackets. On the morning of 6 July an American B-24 dropped three rubber boats, one of which sank. The wounded were placed in the others, and men were gradually collected until about 25 surrounded each boat. The next day (Tuesday, 7 July), planes, which gave no help, were the only craft sighted.

> On Wednesday morning the survivors concluded that their best chance lay in making for Vella Lavella, as the wind and sea were setting in toward that island, and one of the officers had read that the natives there were friendly. During the day one of the survivors died; a few others swam away and were not seen again. A case of potatoes floated by and assisted materially in relieving thirst. On Wednesday night several more men strayed from the boat and were not seen again; thus identity was unknown, as the whole group was covered with oil and suffering from exhaustion. During the night the two boats became separated and drifted ashore at different points on the coast of Vella Lavella. After giving food and water to the survivors, friendly natives took them back into the bush to avoid detection by roving Japanese patrols. Medical supplies and emergency rations from some of the ship's rafts were assembled, and the wounded were given beds in a Chinese house. [53]

The 175 survivors on Vella Lavella were rescued by a force of destroyers on 16 July and taken to Tulagi for medical attention.

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53. O.N.I., Solomons, X, pp. 46-47.

## Military and Medical Forces

Although the Japanese intended to develop New Georgia as a major base, they were never able to bring in sufficient forces for this purpose. The enemy units on New Georgia included only the following: part of the Kure 6th Special Naval Landing Force; construction and labor troops totaling 2,000; and the 229th and 13th Infantry Regiments. The total number of Japanese troops on New Georgia was about 6,000 with another 2,000 on Kolombangara.

At the time of the American landing in the New Georgia area, most of the Japanese garrisons had been in the vicinity from five to nine months. American intelligence officers learned that during this time the Japanese "suffered from disease and attrition, the cumulative effect of which was to weaken their forces and render less costly our seizure of the islands."[54]

The principal factor in this attrition was malaria. Most of the Japanese had spent some time in New Britain or Bougainville before reaching the Central Solomons and were already heavily seeded with malaria. The incidence is believed to have exceeded 30 percent by June 1943. The intelligence report points out, in contrast, that "malaria incidence amongst Allied troops in the Central Solomons did not rise over 5 percent per month, and was

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54. Third Amphibious Corps Headquarters, G-2 Section, "The Influence of Medical Factors in Land Campaigns in the South and Southwest Pacific," Special Medical Intelligence Report No. 4, 19 Oct. 1944, p. 15. MS in Planning Division, Bureau of Medicine, Navy Department.

never a serious impediment." In conclusion: "Medical factors in the New Georgia campaign acted significantly in our favor, but were not as important as at Guadalcanal. The decisive factor in the Central Solomons was superiority in numbers of troops and ships and in the air; and overwhelming artillery support. Over two divisions of American troops were used against about 8,000 enemy."[55]

American forces included Army, Navy, and Marine personnel. The initial landings were amphibious operations under Navy control, and when beachheads had been established, the 43rd Army Division took over under the title of the New Georgia Occupation Force. This division was in charge until 17 July 1943, when the forward echelon of XIV Corps Headquarters took charge of the operation. The initial force numbered 15,000, while the total strength of all forces in the final push reached 35,000.[56]

Accompanying these fighting forces were medical personnel from the various services. The Army medical unit consisted, at the opening of the campaign, of the integral medical units of the 43rd Division. One clearing platoon covered the medical service of the small force which landed at Wickham on Vangunu Island off the southern tip of New Georgia. Collecting company detachments

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55. Third Corps, Intelligence Report, 19 Oct. 1944, p. 16.

56. XIV Corps Headquarters, Office of the Surgeon, "Medical Service, New Georgia Campaign," 31 Oct. 1943, p. 1. MS in Planning Division, Bureau of Medicine, Navy Department. This excellent report was prepared by Col. Franklin T. Hallam, Corps Surgeon. Cited hereafter as XIV Corps, "Medical Service, New Georgia," p. 1.

covered Viru and Segi landings. The remaining clearing platoon of the clearing company of the 118th Medical Battalion covered the main body of troops landing at Rendova. When a regimental team from the 25th Division moved into combat, it contained a collecting company. The 37th Division, which was transferred from Guadalcanal to New Georgia, included normal medical attachments and two collecting companies and one clearing company of the 112th Medical Battalion.

When Headquarters, XIV Corps, moved from Guadalcanal to Rendova on 13 and 14 July to take command of the New Georgia Occupation Force, the Corps Surgeon, Col. Franklin T. Hallam, was the only representative of the medical section. The Corps Medical Inspector and two enlisted clerks arrived one week later, at which time the medical section was set up. The personnel of one platoon from the 17th Field Hospital arrived at Rendova on 18 July. The remainder of the personnel and the hospital equipment arrived six days later; by 26 July 1943, a field hospital was in operation on Kokorana Island.[57]

Since Navy military personnel were much less numerous than Army, the Navy dispatched fewer medical units to the Central Solomons. The 82nd Construction Battalion and the 9th Marine Defense Battalion each had sick bays of approximately 50 bed capacity. ACORN 8 operated a sick bay and dispensary for attached

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57. XIV Corps, "Medical Service, New Georgia," pp. 2-3.

Navy and Marine units. The advance elements of CUB 3 base hospital unit arrived on New Georgia late in September to set up a base hospital with a capacity of 200 beds. This was the nucleus of a 1,200 - 1,500 bed hospital. Throughout the operation all medical units and installations remained under the separate command of Army and Navy tactical units.[58]

## Medical Supply

Medical supplies for most of the New Georgia operation were provided by the Army. The original plan provided that supplies for a total of 60 days be available - 30 days supplies to be carried by units, with another 30 days supplies in reserve to be forwarded as soon as practicable. In addition, certain items which could be expected to be expended rapidly in combat were to be available in amounts approximately ten times the normal maintenance allowances. These included the sulfonamide drugs, dried blood plasma, intravenous saline and glucose solutions, battle dressings, morphine syrettes, packets, plaster, and tetanus toxoid. Individual jungle medical kits were to be supplied on the basis of one per officer or enlisted medical personnel and one per four other enlisted men. A 60-day supply of antimalarial drugs was to be kept on hand at all times. Most of the necessary supplies came from the medical supply depot at Guadalcanal, with some coming

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58. XIV Corps, "Medical Service, New Georgia,", p. 3.

from rear areas.

The 43rd Division, which had sole responsibility for medical supplies for the entire operation from 30 June to 28 July, experienced great difficulty in carrying out the plans. Before moving to the combat area the division secured supplies far in excess of the need, the tendency being "to take all they could get." As a result, only a small portion of the huge stores accumulated on the beaches could be taken along and in the confusion of embarking for combat many essential items were left behind:

> Instead of thirty days medical maintenance supplies accompanying the units, it is estimated that but ten days supplies were brought along. Of the supplies accompanying troops, containers were not sufficiently clearly marked to show contents, and medical supplies became hopelessly mixed in ration, fuel and ammunition dumps. In less than three days, radiographic requests for additional medical supplies were received at Guadalcanal. This indicated that there had been a serious breakdown in medical supply along the line . . . . Emergency requests were filled and limited supplies flown to New Georgia from Guadalcanal.[59]

The divisions and medical units which arrived later brought adequate supplies and they were handled much more efficiently. Despite the early confusion, Army medical service during the operation as a whole was not seriously impaired. The personnel in charge of supplies profited from the mistakes of their predecessors.

Navy medical personnel secured most of their supplies

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59. XIV Corps, "Medical Experience, New Georgia," pp. 15-16.

from MOB 8 Hospital on Guadalcanal. In emergencies they called upon the Army medical supply officers. At the beginning of the operation, Navy and Marine units were low on antimalarial drugs. A supply was, however, soon received from Guadalcanal and distributed by the Malaria Control Unit. The hospital operated by ACORN 8 provided some of the smaller Navy units with medical supplies. Colonel Hallam noted a "tendency on the part of Navy medical units to wait until supplies were exhausted, then radio requisitions to Guadalcanal for air shipment. This same condition existed to a large extent throughout the campaign, and indicates a need for better supply planning in Navy medical units based ashore." [60]

## Sanitation

The topography and climate of the New Georgia area were not conducive to the maintenance of good sanitary conditions. Except for Rendova and Kolombangara, which are of volcanic origin, most of the islands are coral. They are usually covered with dense jungle growth and a mucky clay which is quite moist at all times, muddy when it rains, and very unsatisfactory for camp areas. Only on the hillsides could satisfactory camp sites be found.

Rainfall is heavy, especially on Rendova, and fairly constant throughout the year. The temperature during the campaign

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60. XIV Corps, "Medical Service, New Georgia," p. 18.

seldom exceeded 94° F. in the daytime and ranged from 74° F. to 78° F. at night. Humidity is high, especially in the jungle. It was September before the camp areas dried out enough to permit a thorough policing, the burning of brush, and the filling of bomb craters.

Troops located on Rendova had adequate water from the Soroko River, where portable filtration and chlorination units were set up. Many of the small islands had to bring in water from outside sources. Toward the close of the campaign, wells were driven on New Georgia, assuring a safe and permanent source of water. The Corps Surgeon thought that outbreaks of intestinal disorders associated with the water supply were due solely to contamination of the water after it left the water point.

The disposal of wastes, which could not be burned because of the necessities of security, proved difficult. Kitchen wastes were buried or carried out to sea in small boats. In temporary camps or bivouac areas, human wastes were disposed of by the use of straddle trenches or deep pits covered with box latrines. Screening was not practicable during the early stages of combat. Sanitation among front-line troops was much less satisfactory.

Insanitary conditions and the lack of screening made flies a serious problem throughout the campaign. Colonel Hallam wrote:

I believe that wire screening offers more protection to the health and well-being of troops than armor plate, and that more non-effectives result from diseases due to improper sanitation than those resulting from combat injuries. Instead of waiting until a unit loses 25 to 50 percent of its combat efficiency as a result of disease due to improper sanitation, it is recommended that any unit going into combat be adequately supplied with screening and necessary supplies to insure proper sanitation of messes and latrines. This precaution will insure a greater saving of manpower than that lost through injuries incurred by enemy action.[61]

Disease Incidence: Malaria

Malaria, which caused thousands of non-effectives on Guadalcanal, was not as series a problem in the New Georgia area. This was due to the presence of fewer infected anopheles mosquitoes and better control work on the part of medical forces. The fight against malaria had to be begun even before the campaign opened and continued throughout the stay on the islands.

In a careful survey of the combat areas, the Malaria Control Unit found that anopheline breeding was present to a moderate degree almost everywhere. The 43rd and 37th Army Divisions were fairly free of malaria at the beginning of the campaign, but the 25th, which had been at Guadalcanal since December 1942, was thoroughly saturated with the disease. Thus the relatively low incidence of malaria indicates that control was good. The campaign opened 30 June 1943 and the cases of malaria reported to medical authorities follow:

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61. XIV Corps, "Medical Service, New Georgia," p. 23.

| Month | Army | Navy | Marines | South Pacific Scouts | Total |
|---|---|---|---|---|---|
| July | 422 | 21 | 80 | 18 | 541 |
| August | 812 | 26 | 89 | 1 | 928 |
| September | 1,054 | 273 | 107 | 0 | 1,434 |

In all statistics the 25th Division, because of the original infection, showed a much higher incidence than any other unit. In August, for example, the 25th had a rate of 852 cases per 1,000 per year, while the rate of the 37th was only 120 per 1,000 per year. The September rate for the 25th was 1,313 per 1,000 per year as compared with 327 per 1,000 per year for the 37th. The rate for the entire command during September, the worst month, was 629 cases per 1,000 per year.[62]

On the basis of rates prior to combat, the forces did not show an appreciable increase in malaria incidence during combat. In fact, the 25th Division showed a much more favorable rate during the campaign than it did at Guadalcanal during the non-combat phase. James J. Sapero, Malaria Control Officer for the South Pacific, was justly pleased with the work of the control units in the New Georgia area. He wrote:

> In contrast to the near disastrous situation on the first malarious occupied island, was that which occurred at the next base occupied by military forces. The commanding officer there from the first had the advantage of a group of trained personnel to advise him regarding the pattern of the disease, and in methods of prevention. Equally important, the high command consistently followed the recommendations

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62. XIV Corps, "Medical Service, New Georgia," p. 29.

> which were made. One of the most spectacular achievements of the malaria control group was their convincing the high command that imported native laborers (the major cause of the epidemic on the first occupied island) would cause a far greater loss of man hours in troops due to sickness with malaria than could be gained by the presence of natives. The result on this base was that malaria never became a major military threat. The low rates achieved, in contrast to the earlier experience, will go down in history as a classic of what may be accomplished in disease prevention. That the extremely low prevalence of malaria did not follow due to the island's being naturally less malarious, has been repeatedly demonstrated on this island.[63]

A malaria control unit consisting of two naval officers, eight Navy corpsmen, and one Army enlisted man arrived on Rendova on 14 July and started to work immediately. Survey work was pushed rapidly, especially in troop bivouac areas on the coastal strip on Rendova, Kokorana, Barabuni, Bau, Sasavele, and Baraulu. Areas showing heavy anopheline breeding were abandoned as camp sites. Oiling was started immediately; careful rechecks were made at intervals, and all anopheline breeding came under control in a few days. Where troops were to be moved into new areas, careful surveys were made and corrective measures instituted.[64]

Laboratories were set up in clearing stations, the 17th Field Hospital, and by the Malaria Control Unit itself. Blood smears were made for laboratory diagnosis whenever possible. There

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63. "Highlights on Epidemic Diseases Occurring in Military Forces in the Early Phases of the War in the South Pacific," p. 5. MS in Administrative History Section, Bureau of Medicine, Navy Department. Cited hereafter as Sapero, "Epidemic Disease," p. 5.

64. XIV Corps, "Medical Service, New Georgia," p. 49.

was little evidence of initial infections, practically all cases being relapses or recurrences. Insect repellents were available but the need was so slight that they were not used extensively. Troops in front line positions did not use head nets because they reduced visibility and the need was not considered sufficiently great.

During August barrels of Diesel oil were spotted at strategic locations. All oiling and supervision were under the direct control of the Malaria Control Unit. As far as possible, road and trail ruts, bomb and shell craters were filled in. Suppressive treatment of malaria with atabrine was continued under careful supervision. The drug had to be administered by roster and the ingestion actually observed. The dose for combat troops was 0.6 gram per week or one tablet (0.1 Gm.) daily except Sunday.

### Common Diarrheas

Diarrhea was reported quite prevalent in July, moderately so in August, and definitely lower in September. During the first six weeks of the operation, 10 percent of the command was affected each week, or nearly 50 percent per month. All common diarrheas were attributed to improper field sanitation, with particular reference to messes, kitchens, and latrines. The average period of non-effectiveness was four days, while the disease ran the typical course of nausea, vomiting, diarrhea, fever, and general malaise.[65]

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65. XIV Corps, "Medical Service, New Georgia," p. 30.

## Dysentery

Although dysentery plagued troops initially upon every new landing, little advance was made in the prevention of the disease. There was a close correlation in almost every instance with fly density. When the dead were buried and as latrines were established, garbage properly removed, and screens installed dysentery stopped. Unfortunately, before these measures could be instituted, many cases occurred with typical fever, general malaise, diarrheas, abdominal pains, and stools. Most cases responded promptly to massive doses of sulfaguanidine. Despite the non-effectives produced, severe dysentery with fatal results was not encountered.[66]

## Fungus Infections

Fungus infections were extremely numerous, involving about 25 percent of the entire New Georgia Occupation Force. In some units, notably Navy construction battalions and labor battalions, the nature of their work was such as to prevent good personal hygiene. In one construction battalion 10 percent to 15 percent of the command was admitted to sick call daily for treatment of fungus infections of the skin. Foot infections were prevalent in approximately 30 percent of all troops. The issue of socks was inadequate, bathing and laundry facilities insufficient, and bathing at night was not practicable due to malaria control

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66. Sapero, "Epidemic Diseases," p. 10.

measures.[67]

War Neurosis

> The most serious medical problem encountered in the New Georgia operation was the relatively high incidence of mental distrubances, coming under the general classification of "War Neurosis", a misnomer in most instances, but of medical importance since practically all cases of combat fatigue, exhaustion states and 'war-weariness' were erroneously directed or gravitated through medical channels along with the true psychoneurotics and those suffering with a temporary mental distrubance, currently termed "War Neurosis".[68]

During the period from 30 June to 30 September, approximately 2,500 individuals were admitted to the medical installations in the New Georgia area with the diagnosis of war neurosis. Of these about 1,950 occurred in the 43rd Division, 200 in the 37th Division, 150 in the 25th Division, and 200 in Navy and Marine units. Chronologically, 1,750 cases occurred in July, 650 in August, and 100 in September. Although the 43rd Division numbered only about 12,000, or 40 percent of the strength of the force, it contributed almost 80 percent of the total number of cases.

In attempting to determine the causes of the high incidence of mental disorders in the 43rd Division, several factors are revealed. There was a definite indication that leaders of small

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67. XIV Corps, "Medical Service, New Georgia," p. 41.

68. XIV Corps, "Medical Service, New Georgia," p. 31.

units, on the whole, did not demonstrate the inherent qualities which should be required of leaders. Junior and non-commissioned officers were often the first to "break", and a needless sacrifice of manpower resulted from others becoming panic stricken at the realization that their leaders were no longer able to direct them.[69]

The lack of proper orientation probably contributed to the prevalance of mental disorders. A fighting man needs to know what is going on, what is expected of him, and what he may expect to encounter; he must also have a definite objective. Without proper orientation he is more prone to absorb wild rumors and loose talk, which result in constant mental stress. It is quite likely that a lack of proper physical fitness contributed to the high incidence of war neurosis by making some individuals more susceptible to the precipitating causes.

Perhaps the predominant precipitating factor was combat fatigue. Probably 50 percent of the alleged mental cases should have been diagnosed simply as combat fatigue. Another 20 percent were borderline cases in which fatigue and exhaustion contributed to the chain of symptons. Proof lies in the fact that removal of these persons to a place where they could obtain three or four days rest, a bath, and nourishing food resulted in complete recovery in 75 to

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69. XIV Corps, "Medical Service, New Georgia," p. 33.

80 percent of the cases. Enemy action, especially patrols infiltrating their lines, and jungle noises sometimes precipitated breaks. Finally, infectious mass hysteria entered the picture, showing the need of the prompt removal of non-effectives from the scene.[70]

## Battle Casualties

Approximately 1,000 American troops were killed in action during the New Georgia campaign. Of these, 811 were Army forces, 48 Navy personnel, and 132 Marines. The total number of wounded was about 4,000 of which 1,500 were Navy and Marine. Of those wounded, about 65 died in local medical installations within 24 hours and 15 died enroute to Guadalcanal.

Medical personnel in the islands were handicapped in the treatment of casualties by several factors which they had no control. No hospital facilities were available in the NewGeorgia area until 28 July, four weeks after the campaign started, when a field hospital hurriedly established its installations on Kokorana Island. Prior to that time, the nearest hospital was on Guadalcanal, 200 miles or 20 hours by boat, to the rear. There was no air evacuation, except by emergency Dumbo (PBY), until 15 August, by which time 90 percent of the casualties had occurred.[71]

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70. XIV Corps, "Medical Service,New Georgia", p. 36.

71. XIV Corps, "Medical Service, New Georgia", p. 44.

First-aid measures were carried out in the field as effectively as possible. In the battalion aid stations wounds were cleaned, foreign bodies removed, and bandages applied. Sulfonamides were used extensively, locally and by mouth. Dried blood plasma prevented further shock. The use of plaster in forward areas was extensive, and cases so treated reached the rear in good condition.

Since clearing stations and the one field hospital were the terminal medical installations in the combat area, definitive procedures were accomplished here. The best surgeons among the units, though insufficient in number, were utilized in these installations. "Regardless," wrote the Corps Surgeon, "of rank or grade, race or color, branch of the Armed Forces of this or allied forces, the wounded were handled as human beings should be handled and to the best professional ability of the attending surgeons."[72]

## Hospitalization

As noted above, facilities for hospitalization in the islands were strictly limited. Prior to 28 July 1943, the only Army facilities were two clearing stations with a total capacity of 250 beds. Navy and Marine units had only normal medical attachments with limited sick bay facilities which could not be

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72. XIV Corps, "Medical Service, New Georgia", p. 46.

construed as affording adequate hospital facilities. The 17th Field Hospital, which arrived 28 July, had a capacity of 250 beds. On 6 September, one platoon of the 17th Field Hospital opened a 125 (later 340) bed hospital on the mainland of New Georgia. The Navy had no hospital until late in September when CUB 3 Naval Base Hospital Unit arrived at New Georgia and began construction of a base hospital of 200-bed capacity. During July, therefore, there were beds for less than one percent of the troops. This was increased in August and September to three percent, which was still inadequate.[73]

## Evacuation

In view of the small number of beds available in the New Georgia area, a policy of rapid evacuation of casualties was essential. Evacuation from positions on Wickham, Segi, and Viru was to the Russell Islands by returning supply boats. The exception was a small number of injured who were flown out after the fighter strip was placed in operation. Although forces around Rice Anchorage and Enogi were usually evacuated by supply boats returning to Guadalcanal, on several occasions PBY amphibious planes from Florida Island carried out loads of wounded and sick. Evacuation from Vella Lavella was by returning supply boats to Guadalcanal, with the exception of a few casualties moved to New Georgia

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73. XIV Corps, "Medical Service, New Georgia", pp. 8-9.

by PT boat. After the active fighting ended, SCAT plans began evacuation flights from Vella Lavella.

The medical historian of the Ninth Defense Battalion, Fleet Marine Force, has described the evacuation experiences of his aid station on Rendova. An almost constant downpour of rain and the movement of heavy equipment rendered the few existing roads impassable. Transportation was confined to small boats and amphibian tractors. East Beach, where the battalion aid station was located, was the unloading point for LST's-hence a popular target area for enemy bombers.

For the first two weeks in July, casualties and sick personnel were brought at all hours from both Rendova and New Georgia to East Beach for evacuation by LST. Many of these evacuees required immediate treatment, especially for shock, and the battalion medical department was kept busy both at the aid station and aboard the LST's, where there was a shortage of medical officers. In addition to Marine personnel treated, there was an almost continuous procession of Army and Navy personnel who came to the aid station because they were unable to find their own medical departments.[74]

For the first four weeks of the New Georgia operation, each LST evacuating casualties to Guadalcanal had but one doctor, a naval medical officer, despite the fact that there were from 100 to

74. Ninth Defense Battalion, Fleet Marine Force, Historical Supplement to the Annual Sanitary Report, 1943, p. 10. MS in Administrative History Section, Bureau of Medicine, Navy Department.

200 casualties aboard. Timing the arrival of evacuees at the beaches was a difficult problem. The LST's would arrive early each morning, unload during the day, and depart by 1800 the same day. The patients had to be rushed aboard immediately after the completion of unloading, whatever the state of the weather or enemy activity. Captain Gendreau, (MC), USN, was killed in an attack on an LST just after it had completed loading casualties.

The doctors, because of the limited number of beds in the New Georgia area, were forced to follow a 24 hour evacuation policy, that is, evacuation of patients the day they became casualties. Although the actual sailing time by LST from Rendova to Guadalcanal was only about 20 hours, it is obvious that many casualties who received but slight first-aid treatment at Rendova did not reach medical installations at Guadalcanal until 72 to 84 hours after injuries had been incurred. "The time factor and the limited medical facilities aboard the LST's resulted in inevitable wound infections, and contributed materially to the incidence of gas gangrene infection in the early days of the campaign."[75]

Prior to 15 August 1943, when the first SCAT plane landed on the recently captured Munda field, several casualties were evacuated by returning administrative amphibious planes. This service was supposed to be available to those needing attention most urgently, but

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75. XIV Corps, "Medical Service, New Georgia," p. 5.

Colonel Hallam observed "that commissioned officers probably received more consideration in obtaining this type of transportation than an unbiased evaluation of the severity of their injuries would have warranted." During the last two weeks of August, SCAT flew out 132 patients, while in September the number was 488.[76]

Evacuations from all units in the New Georgia area by all means of transportation during the period 30 June to 31 August totaled 6,693. Of these, 5,736 were from Army units, 241 from Navy, and 716 from the Marine Corps. During September, 1,533 were evacuated from all units, making a total of 8,226 evacuated during the campaign. Air evacuation accounted for only 925, of which 620 were handled by SCAT. That leaves the much larger number of 7,300 evacuated by returning supply boats and ships. Except for unavoidable delays which sometimes resulted in the infection of wounds, the evacuation program was both adequate and well conducted. The story of LST 448 illustrates the problems of evacuation and the gallant manner in which they were met.

The ship arrived at Vella Lavella 1 October 1943 and beached at 0735. While unloading, all hands prepared for an aerial attack, which came at 0935. The medical officers were on their way to battle dressing stations when the bomb struck. Dr. George

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76. XIV Corps, Medical Service, New Georgia, p. 6.

H. Pfohl, Senior Medical Officer, wrote:

> The impact and concussion was so great that I was knocked back into my cabin and everything went black. I groped out of my cabin and tried to get to my battle dressing station which was located in the galley, but it was a mass of flame and black smoke. I then went forward and came out on the deck on the port side just behind the wardroom where I saw many of our crew lying about the deck. I then saw Dr. Freemon and 3 of our hospital corpsmen giving first aid to the wounded. Hospital corpsman Clawson was located at his battle dressing station on the port side forward where he was giving first-aid treatment in that area and also on the tank deck.
>
> We all worked diligently with the wounded taking care of their injuries, giving morphine and placing them on cots and stretchers for evacuation. Our own small boat, which had been brought along the starboard side just forward to the Conn deck was used for evacuation of the wounded. Another boat then pulled up to the stern or the starboard side which we also used for evacuation. . . . During the entire treatment and evacuation of the wounded the entire ship from amidships to the stern was a mass of flames, and we could hear the ammunition exploding below decks. All of the officers and men who were left on top side did a noble job in helping to evacuate the wounded. . . .[77]

The order to abandon ship was given by the Captain about 0955 and by 1010 the evacuation of the wounded to the boats had been completed. They were removed from the boats and taken up on the beach where blood plasma was given, splints applied, tourniquets loosened and reapplied, and dressings adjusted. Then they were placed on trucks and boats for removal to a safe area for further treatment, as there was danger that the ship would blow up at any time. The next

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77. LST 448, Senior Medical Officer Report, 3 Oct. 1943. MS Planning Division, Bureau of Medicine, Navy Department.

day Dr. Pfohl was ordered to proceed to a rear base with the wounded by SCAT. He left Vella Lavella at 1240, arriving at Henderson Field at 1430. The wounded were taken immediately by ambulance to MOB 8 for definitive treatment.

## Section 3 Bougainville

### The Landing

Bougainville, the largest of the Solomon Islands, lies about 150 miles northwest of New Georgia. Just off its southern tip rests a cluster of small islands which includes Shortland and the Treasury Islands. By September 1943, when the New Georgia campaign came to a close, Japanese forces had been on Bougainville for nearly two years and had built, in addition to extensive ground defenses, a total of six airfields. Japanese supply and communication routes to Bougainville were well protected and the island was within easy reach of Truk, Kaviong, and other strong bases. Bougainville was, therefore, a formidable obstacle to further Allied advances to the north.

The South Pacific Command decided as early as 11 July 1943 that an assault should be made upon Bougainville, but the final plans were not formulated until 22 October. Rear Adm. Theodore S. Wilkinson, Commander Third Amphibious Force, had the responsibility for the detailed planning of the naval operations. Lt. Gen. Alexander A. Vandegrift was placed in command of land forces for the operation.

Empress Augusta Bay, about midway on the western coast of Bougainville, was selected as the site for the assault. It presented, however, a number of disadvantages from both the tactical and medical viewpoints. The low, swampy, timbered coast had limited protection from onshore winds and was very poor for camp sites. There was only

a meager network of foot trails, and no satisfactory anchorage for larger vessels. To offset these disadvantages, defenses in the area were believed to be comparatively weak. In the final plan D-day for Bougainville was set as 1 November 1943, with the conquest of the Treasury Islands to occur on D minus 5.[78]

The Third Marine Division, reinforced was assigned the Empress Augusta Bay mission. To the Eighth New Zealand Brigade Group, reinforced, fell the assignment of occupying the Treasury Islands. Admiral Wilkinson's Third Amphibious Force was divided into the Northern Force, for Empress Augusta Bay, and the Southern Force, for the Treasury Islands. Guadalcanal, Rendova, and Lambu Lambu were the staging areas. The Northern Force consisted of 8 transports, 4 cargo ships, 7 destroyers, 4 minesweepers, and 2 fleet tugs. One of the first-named was the attack transport USS AMERICAN LEGION.

In preparation for the landing, the medical department of the LEGION made detailed plans. Since the date of the attack was not known in advance, adequate supplies for any emergency were constantly kept in stock. Battle stations for medical personnel were recast in the light of a reduced complement, the number of doctors having been cut from 6 to 3 and corpsmen from 20 to 13. Additional first-aid and treatment gear were spread throughout the ship after careful survey of every location that might shelter an injured man. In anticipation of receipt of heavy casualties, a plan of receiving

78. Office of Naval Intelligence, Solomon Islands Campaign, XII, pp. 1-7.

sorting, tagging, and treating the injured was outlined; positions, assigned; and gear, made ready.[79]

It was necessary in preparing for the landing to organize a medical section of the naval shore party, which was charged with the emergency treatment of casualties occurring on the beach and the evacuation of all casualties to the ships. Although the previously drawn plans provided that one medical officer, eight corpsmen, and a large amount of equipment be sent ashore by each ship, an arrangement was worked out whereby the LEGION provided only a pharmacist's mate, litters and blankets for exchange, and one large pouch of first-aid gear.[80]

By 0645 on 1 November 1943 all transports were in place and the order to "land the landing force" was executed. The operation of landing craft proved, however, to be very difficult. The beach was steep and the surf extremely heavy. By noon 20 boats of the LEGION were stranded, with a total of 86 from the entire transport group broached and stranded. The LEGION and four other transports had to be shifted to beaches assigned other ships. During this operation the LEGION was grounded for three hours on an uncharted shoal in four and one-half fathoms of water.

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79. USS AMERICAN LEGION, Historical Supplement to Annual Sanitary Report, 1943, p. 13. Cited hereafter as LEGION, Sanitary Report, 1943, p. 13.

80. LEGION, Sanitary Report, 1943, p. 14.

Fortunately, American casualties, 70 killed and 124 wounded, were lighter than the difficult landing would seem to indicate. This was due to the fact that only about 300 Japanese manned the defenses on the beaches. During the two days of the landing operation the LEGION received only four casualties and thus was unable to give the medical battle plan a thorough test.[81]

The general medical plan of the Corps Surgeon, First Marine Amphibious Corps (composed of the Third Marine Division, reinforced), included the use of three medical companies to set up and equip three units of 400 beds each, prepared to receive patients and give definitive treatment. The two remaining companies were to assist these three and to stand ready to move wherever needed. On D-day the three medical companies and the Headquarters Company, Third Medical Battalion, landed on Bougainville. They had field hospitals ready to receive patients in the following order: Company C on 1 November, Company A on 4 November, and Company D on 13 November. Company E was set up as the Division Hospital on 7 November 1943, with the additional duty of supporting a regiment until Company B arrived. Some of the delay in setting up the hospital facilities was due to the use of medical personnel to unload the ships. Medical officers felt very

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81. LEGION, Sanitary Report, 1943, p. 15.

strongly that hospital corpsmen should not have been assigned this duty.[82]

## Battle Casualties

The total number of American personnel on Bougainville reached 40,550 a few weeks after D-day. They are believed to have been opposed by about 35,000 Japanese. The First Marine Amphibious Corps lost a total of 276 killed in action, 94 missing, and 1,097 wounded.[83] The deaths were brought about as indicated below:

By Battle Wounds

| | |
|---|---|
| Head | 42 |
| Chest | 43 |
| Abdomen | 12 |
| Back | 5 |
| Arms | 1 |
| Legs | 2 |
| Multiple specified | 41 |
| Multiple not specified | 86 |
| Fractures | 2 |
| Details not known | 35 |
| Total | 269 |

82. Corps Surgeon, Headquarters, First Marine Amphibious Corps, "Action Report on Bougainville Operation - Medical," 9 Jan. 1944. Cited hereafter as First Corps Surgeon, Bougainville Operation.

83. U. S. Marine Corps, Historical Division, "The Bougainville Operation," p. XI (Appendix).

| | |
|---|---|
| By Drowning | 1 |
| By Disease | 1 |
| By Injuries | 5 |
| Grand Total of Deaths | 276 |

[84]

Disease Incidence

Except for diseases brought in by the troops and so-called war neurosis, disease incidence was low on Bougainville. There were no cases of malaria that could be traced to local infection. The construction of roads and airfields and the draining of adjacent swamps was of great help in malaria control work. Commander Berkley wrote from the Solomons early in 1944, "Malaria control work throughout the South Pacific is being very creditably and effectively handled by the organization (Malaria Control Commission) set up for that purpose. The project receives forceful and cooperative support from the high command and continued improvement and reduction in malaria is in evidence."[85]

The low incidence of malaria was the result, not of the absence of means of infection, but of the presence of effective control measures. The First Marine Aircraft Wing had, for instance,

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84. First Corps Surgeon, Bougainville Operation.

85. Comdr. W. L. Berkley, (MC), USN, to Vice Adm. Ross T. McIntire (MC), USN, 27 Mar. 1944, p. 3. Cited hereafter as Berkley to McIntire.

been seeded with malaria an estimated 50 percent on Guadalcanal. After arrival at Bougainville, therefore, atabrine prophylaxis was essential. A larger dose, .10 gram daily, became necessary, but this was effective in suppressing the disease, keeping the incidence under one percent. Other factors which contributed to the low rate were

(a) education by a series of lectures and movies
(b) issuing of manual on malarial control to all hands
(c) use of aerosol-pyrethrum bomb and mosquito proof jungle hammock
(d) use of protective clothing during biting hours
(e) local malarial control unit set up with personnel trained in oiling, mapping, and eradicating mosquito breeding
(f) drainage of swampy areas by Construction Battalions.

"It is a significant fact," states the Wing sanitary report, "and perhaps a corrolary that on the one hand intense interest in prevention of malaria was aroused in all from the commanding officers to the privates, and on the other that no one was evacuated because of malaria. And this in spite of the fact that at no time at Bougainville were living quarters screened." [86]

The troops which were previously quartered in Samoa showed a high incidence of filariasis. Those having clinical symptons should, in the opinion of the medical officers, have been promptly

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86. Headquarters Squadron, First Marine Aircraft Wing, Fleet Marine Force, Historical Supplement to Annual Sanitary Report, 1943, p. 8.

weeded out and returned to the United States.

Combat fatigue and war neurosis produced a larger number of casualties on Bougainville than any other disease. Medical officers, as illustrated below, felt heavily the responsibilities presented by these cases:

> The handling of the war neurosis cases, in a combat zone, presents a serious problem. Combat fatigue cases should not be considered as war neurosis cases. Combat fatigue cases can be temporarily rehabilitated and returned to the unit but they break down again under conditions such as existed there. They are figuratively 'punch drunk.' The war neurosis cases, during a raid, became a menace to themselves and those responsible for them. These cases should be sent out of the area of gunfire and air raids for rehabilitation.[87]

Another medical officer observed that, excluding defective neuropsychiatric backgrounds, the primary factors in determining the incidence of combat fatigue were lack of confidence in leaders, lack of training, and physical exhaustion.[88]

Aviation units, which did not suffer from the severe conditions found at the front line, had fewer cases of combat fatigue than ground forces. Nevertheless, one doctor attached to an aviation

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87. First Corps Surgeon, Bougainville Operation.

88. Berkley to McIntire, 27 Mar. 1944, p. 5.

unit wrote that "Only the fact that we were relieved at the end of two months prevented...casualties from occurring. It was necessary to recommend a period of health and recreation for all ground officers of this activity in order to restore mental vigor and physical endurance before returning to combat."[89]

The percentage of gas gangrene cases among the wounded was high in this operation. The First Corps Medical Battalion, for instance, treated 24 cases, with six deaths. Naval Mobile Hospital Number 8 reported 20 cases of gas gangrene, with one death. The deep swamps, long periods of time individuals were in the front line without facilities for bathing and changing clothes, and initial lack of facilities for storing sera were probably the active factors in producing this condition.[90]

The incidence of disease among the 40,550 Americans on Bougainville is given below:

| Disease | Number of Cases |
|---|---|
| Malaria | 296 |
| Dysentery | 103 |
| Psyschoneurosis | 140 |
| Filariasis | 92 |
| Combat Fatigue | 749 |
| Dengue | 1 |

89. First Marine Aircraft Wing, Sanitary Report, 1943, p. 8.

90. First Corps Surgeon, Bougainville Operation.

| | |
|---|---|
| All Others | 3623 |
| Total | 5004 |
| Injuries, non-battle | 415 |
| Cases treated | 7167 |
| Cases evacuated | 2336 |
| Cases transferred | 2185 |
| Cases returned to duty | 1789 |

Although preventive medicine was unable to remove completely the presence of preventable disease from personnel engaged in the fighting on Bougainville, the incidence was kept extremely low. Tetanus boosters were given to all personnel and no tetanus occurred despite the gross contamination of wounds with mud and dirt. Mild forms of diarrhea and dysentery were experienced by practically every man on the island, but quick control by the use of sulfa drugs eliminated carriers and kept down the incidence. The combat plans did not take into consideration the control of food, flies, garbage, and feces at a time when it could have prevented the development of disease. Military operations superseded all else to the extent that sanitation suffered. All heads, galleys, and mess halls were, nevertheless, screened as soon as possible. Since fires were not allowed, garbage had, at the first, to be disposed of by burial; but after a few weeks a garbage disposal scow was obtained, the use of

91. First Corps Surgeon, Bougainville Operation.

which was highly approved in tropical island warfare.[92]

## Evacuation

Evacuation statistics for Bougainville:

| | | |
|---|---|---|
| Total strength on the island ------ | | 40,550 |
| Wounded evacuated ---------- | 2.09% or | 850 |
| Sick evacuated ---------- | 3.65% or | 1,484 |
| Prisoners evacuated --------- | | 2 |
| Total evacuated | | 2,336 |
| Litter cases ---------- | | 598 |
| Ambulatory cases ---------- | | 1,645 |
| Unclassified ---------- | | 93 |

The 1,484 sick evacuated included three principal diseases:

| | |
|---|---|
| War Neurosis ---------- | 54.21% |
| Filariasis (contracted in Samoa)--- | 25.08% |
| Malaria (contracted elsewhere)------ | 8.10% |

| Vehicle of evacuation: | Number: |
|---|---|
| PBY ---------- | 38 |
| LST ---------- | 1,190 |
| LCI ---------- | 38 |
| DD ---------- | 309 |
| APA (attack transport) ------ | 236 |
| APD (high speed transport)--- | 313 |

92. First Marine Aircraft Wing, Sanitary Report, 1943, p. 7.

| | | |
|---|---|---|
| AP (transport)---------- | 99 | |
| DC (transport plane) ---------- | 113 | |
| | ---------- | 93 |
| Total | 2,336 | |

The first seriously wounded casualties were evacuated from Bougainville to the Central and Southern Solomons by PBY amphibious planes. Transportation to and from the planes proved difficult. After being carried by hand or driven in a jeep to the beach, a patient had to be taken in a tank lighter to a small crash boat. The crash boat would then maneuver to the plane's side gun blister, through which the stretchers were loaded. Later South Pacific Combat Air Transport (SCAT) hospital planes took over the air evacuation of patients. Although this usually worked well, the short trip to Vella La Vella had its benefits nullified greatly by the long rough ambulance ride required after the plane landed. This might have been remedied by locating the receiving hospital closer to the air field, "a factor that seems to be neglected completely in selecting the site for such hospitals." [94]

The corps surgeon, First Marine Amphibious Corps, likewise found the evacuation of the seriously wounded by plane "not entirely satisfactory." He maintained that this means should be

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93. First Corps Surgeon, Bougainville Operation.

94. First Marine Aircraft Wing, Sanitary Report, 1943, p. 8.

employed only after thoughtful consideration of the amount of handling required to load and unload the patient and the additional discomfort to the patient of taking off and landing.[95]

The majority of casualties were evacuated by LST's returning to Vella La Vella and Guadalcanal. This likewise was a difficult transaction. The landing area for LST boats at Bougainville was on Puruata Island in Empress Augusta Bay. Patients were transferred to the beach, loaded into tank lighters, and taken out to the LST's. Since these ships had no facilities on the tank deck, the patients had to be carried into smaller compartments. Surgical facilities, though sorely needed, were often very limited aboard these ships.[96]

Medical officers agreed that the best time for definitive surgical treatment was within 12 hours after the injury occurred. The task of giving this service fell to the medical departments of the LST's supplying the troops ashore. The principal reason for this, to quote an LST flotilla commander, was the "fact that adequate shore medical facilities have not been established in combat zones for weeks after the initial landing." This meant that the wounded being evacuated often needed surgical care in addition to transportation.

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95. First Corps Surgeon, Bougainville Operation.

96. First Marine Aircraft Wing, Sanitary Report, 1943. p. 9.

The work of the New Zealand Army medical department in the Treasury occupation was an exception. This department landed at 0700 in the first wave, and by 1400 the same day was performing major surgical procedures. "This is the only instance known in this area where adequate medical facilities have been completed in a combat zone prior to the arrival of a succeeding echelon of LST's."[97]

Despite a few difficulties of the type noted above, the general pattern of evacuation from Bougainville appears to have been quite satisfactory. An Army observer praised the Navy's evacuation work on Bougainville:

> In New Georgia, all arrangements were made by medical units direct with returning supply boats and later, SCAT air evacuation facilities. As a result, many unauthorized individuals were sent to the rear. In Bougainville, the Navy was given the sole responsibility of planning and coordinating all evacuation from the island, and results were excellent.
>
> There was a minimum of personnel evacuated, due to the careful selection of those to be evacuated. Proper priorities were established and maintained under centralized control with resultant minimum in delay in transporting sick and wounded to the rear.[98]

Commander Berkley, who was charged with supervision of the incoming and outgoing evacuation of 20,000 patients on Guadalcanal, praised those directly in charge of evacuation work. The Solomons

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97. LST Flotilla Five, Third Amphibious Force, U. S. Pacific Fleet, "Action Report, Bougainville Nov 4-8, 1943," p. 5.

98. G. C. Hdqs., USAFISPA, Operations Branch, "Lessons Learned from Joint Operations in the New Georgia and Bougainville Operations," June-Nov., 1943.

campaign was a joint Army-Navy medical operation and practically all the 20,000 patients came through Guadalcanal where hospital facilities were pooled when necessary. "The hospitals of both services functioned efficiently and in fine cooperation." Only in the early part of the Rendova operation were hospital facilities crowded, and this was of short duration. Mobile Hospital Number 8 carried the larger part of the Navy load, admitting and discharging about 14,000 patients. This hospital illustrated the value of having adequate hospital facilities at the base of supply for general combat operations rather than on other islands where some factors might appear more favorable.

The LST's sailed directly from the combat area for further military supplies and thereby made the evacuation of patients relatively easy. "Hospitals located away from supply bases," wrote Commander Berkley, "find their usefulness sharply curtailed as these ships will not risk the additional danger of detouring for the sole purpose of debarking patients."[99]

In conclusion, medical and health factors strongly favored the Americans during the fighting of Bougainville. There were thought to be 35,000 Japanese on the island prior to the American

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99. Berkley to McIntire, 27 Mar. 1944, pp. 4-5.

landing, but by March 1944 the number had been reduced to about 22,000. In many units over half the troops had beri-beri, many died of it, and all were weakened by hunger. Malaria was almost universal and many deaths occurred after medical supplies were depleted. Many Japanese, lacking medical care, died of dysentery and diarrhea. Of the 13,000 Japanese troops who melted away between 1 September 1943 and 9 March 1944 only about 3,000 were killed in action - the remainder died from disease and the lack of medical care.

At the same time, conditions among American forces formed a sharp contrast with those of the enemy and reflect great credit upon the Navy Medical Department. Malaria was effectively controlled, with the incidence in our forces about 1 percent. The incidence in enemy forces across the line was about 70 percent. American troops were well feed; sanitation was as good as jungle warfare permitted, and enteric maladies were kept down. Disease and malnutrition among the enemy, contrasted with the essentially sound health of American forces, changed our slight numerical superiority of early November 1943 to a substantial advantage by March 1944.[100]

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100. C-2 Section, Third Amphibious Corps, "The Influence of Medical Factors in Land Campaigns in the South and Southwest Pacific," 19 Oct. 1944, p. 19.

# THE SOLOMONS

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# CHAPTER IV

## THE ALEUTIANS

Paralleling the South Pacific Solomons campaigns was another American offensive far to the North. In the summer of 1942 the Japanese had occupied several of the islands in the Aleutian group, the most important of which were Attu and Kiska; by May 1943, United States forces were ready to attempt the reconquest of these Japanese outposts. D-day for the capture of Attu (Landcrab operation) was set for 11 May 1943).

### Attu

On the morning of 11 May landings were made on the north coast of Attu, and the American forces proceeded inland. In the afternoon other landings were made at Massacre Bay, and also at Holtz Bay. These landings were covered by American naval forces, and in the bitter fighting which followed, various naval units assisted Army troops by furnishing fire support and air cover. Enemy attacks on American naval forces were ineffective.

The story of naval medicine at Attu was largely the story of the work of the medical staff aboard the individual ships. There was the attack transport, USS J. FRANKLIN BELL, which received her first experience against the enemy at Attu. The J. FRANKLIN BELL participated in the landings on the northern

sector. Between 11 and 16 May the beach party of this ship was called upon to evacuate 80 casualties. Torpedoes were fired by the Japanese at the vessel, and the necessity for haste during one torpedo alarm resulted in one man's being fatally crushed by the falling of a landing boat. This and other shipboard and boat casualties raised the total to 100. Exposure to foul weather complicated battle wounds and in many cases was the only disabling factor. This situation was aggravated by time-consuming difficulties in getting casualties to the beach for transportation to the ship. All casualties were transferred at Adak.[1]

At Attu a total of 260 cases of immersion foot were treated aboard the USS HEYWOOD (APA6). This condition was a result of cold, constriction from all-leather boots, and moisture. The patients came aboard within 36 hours after they had been in the fox holes on the snow-covered slopes of the mountains from four to seven days. Their feet presented the typical picture of severe immersion foot. All the men were placed in a single troop compartment space where the unheated atmosphere remained at about 50° F. Here the men were given routine nursing care and their feet were exposed to the compartment temperature. Over a period of several days the temperature was elevated to comfortable room temperature. During the first day they all experienced a great deal of pain, which in

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1. Annual Sanitary Report, USS J. FRANKLIN BELL (APA16), 1943, pp. 11-12.

most cases was controlled with codeine and aspirin. After about a week, the swelling commenced to subside and devitalized tissue began demarcating as a dry gangrene. Cases in which evidence of gangrene appeared usually involved one or several toes. There were three cases in all observed which were delimited at about the head of the malleoli.

There was one case of particular interest which involved a man who had been shot through the ankle. Shortly after the injury, his boot was removed from the injured foot. The boot on the other foot was not removed. He was not evacuated to the HEYWOOD for three days. The foot which was injured and from which the boot had been moved showed no evidence of immersion foot, while the other foot showed extensive damage typical of immersion foot.

As compared with the patients arriving on board the HEYWOOD at subsequent operations, there were very few cases of initial shock seen at Attu and the infection rate was extremely low. However, the casualties at Attu were shivering and complaining of the cold.[2]

The USS INDIANAPOLIS, although neither hit nor damaged by the enemy, was struck by another American vessel, and part of the hull in the operating room was ripped away. On the same evening

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2. Annual Sanitary Report, USS HEYWOOD (APA6), 1943, p. 24.

that this accident occurred, a surgical emergency arose and the operating room, with canvas covering the hole in the hull, had to be used. It was the experience of the officers and men of the INDIANAPOLIS that no more arduous activity could be devised than patrol and blockade duty in the Aleutians. Physiologically and psychologically it was found to be more wearing than actual combat. The medical officer found that the almost complete absence of respiratory infections in the Aleutians area is medically its only desirable feature. Another unfortunate accident which befell the INDIANAPOLIS was being struck by an abnormally high wave which washed nine men overboard. Two of the men were recovered, suffering from temporary exhaustion only.[3]

The medical organization of the USS RALEIGH could be considered typical of the cruisers participating in this operation and although this ship was not engaged by any enemy forces, its medical organization proves of interest. There were three battle-dressing stations aboard, the forward battle-dressing station being located in the officers' ward room on the main deck. The after battle-dressing station was located on the main deck between the crew's wash rooms. The captain's cabin on the weather deck was converted into an auxiliary battle-dressing station. In the forward or main battle-dressing station, an additional surgical light was installed

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3. Annual Sanitary Report, USS INDIANAPOLIS (CA35), 1943, pp. 7-8.

and a permanent metal battle-dressing locker was placed behind the tripod on the port side. A similar locker was located on the starboard, to be available in the event of an emergency. The facilities for handling casualties, surgical and medical equipment, lights and water were adequate in all battle-dressing stations. Because of pilfering, the morphine was removed from all first-aid boxes and the syrettes were given to responsible personnel in anticipation of an emergency. By the time of the Attu campaign, tannic acid jelly had likewise been removed and replaced with petrolatum, which was then being used on all burn cases on the USS RALEIGH. Constant and adequate first-aid instruction was given systematically to officers and crew, casualty drill problems having been exercised during general quarters and damage control drills. First-aid instructions were clearly augmented by slides and movies which were supplemented by practical demonstrations.[4]

Generally speaking, the morbidity from any source was at a new low in the Aleutians area. It has been suggested that the confinement to ship and lack of contact with civilization, except with the armed forces in the area, was good preventive medicine. Aboard the USS SPICA there were no fatalities or serious injuries -- in spite of the loading and unloading of dangerous cargo in foul weather and rough seas, the use of various types of landing craft, and help that was often inexperienced. Credit for these success-

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4. Annual Sanitary Report, USS RALEIGH (CL7), 1943, pp. 7-9.

ful operations was due to the efficient officers' handling. On the SPICA, besides a sick bay containing six permanent berths and a small operating dispensary, there was an excellent operating room containing adequate sterilizing equipment and surgical instruments to perform the necessary major operations. As a result, the SPICA was able to give necessary aid to ships and small craft unable to reach shore in severe weather, besides giving proper care to the war casualties placed aboard and the casualties and surgical cases occurring in personnel who had recently been placed ashore and were temporarily without sick bay facilities. For those days, during the period of 21 May to 5 June 1943, the medical officer of the SPICA, together with the hospital corpsmen and hospital corpsmen strikers, had to assist war casualties aboard the HEYWOOD. This medical officer and the corpsmen also assisted aboard the USS DAVID W. BRANCH. Aboard the latter, a soldier who had suffered a bayonet wound of the lower abdomen and had part of his omentum protruding was operated upon successfully in an operating room so small it was difficult to stand around the operating room table.[5]

Preventive medicine was practiced extensively aboard these vessels. Typical was the experience on the SPICA where there were lectures and motion pictures on first aid, stressing prevention and treatment of burns, wounds, fractures, hemorrhages, shock, sunstroke,

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5. Annual Sanitary Report, USS SPICA (AK16), 1943, pp. 8-10.

heat exhaustion and venereal disease; frequent instruction of stretcher bearers and corpsmen in the proper technique of handling the injured--particularly those with head injuries and fractures--and in artificial respiration; constant inspection of cooks and mess attendants; inspection of all food stores placed aboard ship; and careful observation of all personnel in regard to their inoculations for typhoid, tetanus, yellow fever, and their booster shots.[6]

As evidenced by the work of the medical department at Attu, medical science, aided by its life-saving drugs, plasma, etc., and rapid transportation from distant battlefields to base hospitals, has reduced mortality but will make World War II noteworthy as "A war of cripples."[7]

An enlightening picture of the treatment of the Japanese wounded was given by the medical officer of the SPICA. The doctrines of Shintoism, promulgating the practice of hara-kiri, prevented the capture of Japanese prisoners. Notwithstanding their sincere and stubborn resistance to capture, a Nipponese prisoner, who survived the explosion of his companion's hand grenade, was borne by litter to the USS SPICA. Our men watched the prisoner with resentment plainly evident on their faces. Fortunately a doctor is able to treat enemy patients unaffected by personal feelings. The patient

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6. Ibid., p. 10.

7. Ibid., p. 11.

was removed to sick bay. The lower right leg was a dangling, swollen, gangrenous mess that required immediate amputation. During the procedure, the patient obviously didn't know whether he was going to be helped or killed, but nothing betrayed his emotions. The leg was amputated about two inches above the right knee. Later in the afternoon, the doctor returned to the patient's cell. Here was a son of Nippon devoutly praying in gratitude for the kindly deed that had saved his life. The day of his transfer to a base hospital he seemed somewhat saddened and insisted on shaking hands with the doctor before leaving the ship.[8]

In the handling of large scale casualties from the beach, insofar as APA's are concerned, it was found that the establishment of a central casualty station through which all casualties passed and from where those cases needing singular care were transferred to other specially set up dressing stations facilitated greatly the handling, care, and recording of the wounded. A suggestion was made that two responsible clerical technicians be assigned to the task of keeping records and arranging and submitting the routine periodical dispatches required during the operations, thereby relieving the medical officer to carry on with treatment. Hospital corpsmen with greater adeptness and higher rates should be assigned to the dress-

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8. Ibid., pp. 11-13.

ing stations and those with lower ratings and less experience assigned to routine care of casualties in the hospital established in the troop compartment.[9]

The USS HATFIELD found that none of the usual communicable diseases - other than catarrhal fever - were encountered, all cases of which responded very rapidly to systematic treatment. Because of the short period of time spent in ports of the mainland of Alaska, no venereal diseases were encountered, although it was reported that many of the native women were infected by syphilis and tuberculosis. Despite the intense cold weather which caused the ship to be covered with a heavy coating of ice, there were no colds among the members of the crew until the HATFIELD put into a port in the United States. The crew were all given vitamin tablets, together with an adequate diet. It was noted that after a time without the multiple vitamin tablets finger nails had a tendency to grow brittle; the hair, to grow dry and unruly; and pimples and boils, to appear on many--particularly on the younger men. Recommendation was made that a sunlamp should be allowed for all types of ships. A great deal of difficulty was experienced in preserving medical supplies in gun bags in the exposed portions of the guns, as rain and snow quickly soaked through the gun bags and destroyed the contents. This was

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9. Annual Sanitary Report, USS HEYWOOD (APA6), 1943. p. 22.

remedied by the simple process of placing the material first in a 30" rubber target balloon and placing the balloons in the gun bags. After weeks of continual use, the contents were found to be dry and ready for instant use.[10]

## Kiska

In the battle for Kiska, Task Unit 16.2.2 was the Navy's invasion force. It consisted of the invasion fleet and a small group of men who were to form the nucleus of a planned naval station at Kiska. The largest portion of the men were members of Amphibious units which operated the various types of small landing craft--LCT's, LCM's, LCV's.[11]

The USS NEW MEXICO also took part in the night engagement which became known variously as the "Battle of the Gremlins" and the "Battle of the Pips." It was not known definitely who were the opponents on this occasion, but it was thought quite possible that they were Japanese submarines engaged in evacuating the enemy from Kiska.[12]

Successful landings were made at Kernal Cove on 15 August 1943 at 1330 and the Cottage Operation (Kiska) could be said to be successful before it started--inasmuch as there was no Japanese opposition. The medical section was established and set to function

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10. Annual Sanitary Report, USS HATFIELD (DD231), 1943, pp. 1-2.
11. Annual Sanitary Report, Sub-Division, Adak Subsector, 1943, p. 16.
12. Ibid., p. 13.

immediately at 1600 the beach party was secured and told to return to its parent ship.[13]

As at Attu, it was found on Kiska that immersion foot and catarrhal fever were the primary medical problems. It was recommended that all ships present at any amphibious operation feed any and all personnel on the beach irrespective of the branch of service to which they belong.[14]

Aboard the USS DOYEN seamen of the boat crews and men of the beach party were especially trained in first aid. Officers were given specific first-aid instructions and issued morphine syrettes and taught their use. Numerous drills were held at practice of general quarters, during which steward's mates assigned to stretcher bearing were taught to handle and transport patients. It was found that they made poor students and poorer stretcher bearers. Repeated surgical drills were held in the operating room until many combinations of corpsmen were capable of setting up the operating room and assisting in surgical procedures. Constant repetition of drills dealing with intravenous procedures were held. Corpsmen practiced venipuncture upon one another until they were proficient and, therefore, competent, after learning the mechanical phase of the equipment, and how to administer plasma, draw and infuse blood and prepare intravenous medications.

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13. Annual Sanitary Report, USS DOYEN (APA1), 1943, p. 18.

14. Ibid., p. 19.

The techniques of the administration of various anesthetic agents were taught the corpsmen--special emphasis being placed upon the use of sodium pentothal. All first-aid boxes were checked on D minus 7 days and again on D minus 1 day, with any deficiencies being corrected at once. Sixty-five army litters equipped with units containing a blanket, four bunk straps and six large safety pins were in readiness.[15]

The J. FRANKLIN BELL handled 32 casualties at Kiska even though there were no Japanese on the Island. Accidental and "trigger happy" wounds occurred and there were a few booby trap accidents. A big factor in the accidental wounds was the careless handling of grenades, the release pins of which had in many cases been loosened before landing in order to have them in a greater state of readiness. Inasmuch as the weather conditions were quite good for the Aleutians, exposure was a minor factor.[16]

There was one notably unfortunate occurrence which happened to the USS ABNER READ. The stern of this destroyer apparently came in contact with a floating mine while on anti-submarine patrol off Kiska the night of 17-18 August 1943. On hearing the explosion, the medical officer proceeded to his battle station in the wardroom. Casualties were brought to this place until it was filled, follow-

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15. Ibid., p. 21.

16. Annual Sanitary Report, USS J. FRANKLIN BELL (APA16), 1943, p. 12.

ing which they were placed in the captain's cabin and the division commander's cabin. Most of the casualties were covered with fuel oil and most of those who had been exposed to the smoke escaping from ruptured smoke screen generators were having difficulty in breathing and were coughing up moderate amounts of whitish sputum. As each casualty arrived, the nature of his injury was quickly determined and those who were suffering from smoke inhalation only were carried below to the CPO quarters or officers' country. Here the wet clothing was removed and the patients were placed in bunks and covered with blankets. The more serious cases, and those with lacerated wounds, were retained in the wardroom. All the lacerated wounds were cleansed with soap and water, sprinkled with sulfanamide, and covered with dressings.

Only two cases were in shock--one an extensive burn case and the other a suspected abdominal injury. The burn case was given morphine (grains 1/4) and two units of plasma intravenously. Both responded satisfactorily. One deceased patient was brought in about 30 minutes after the explosion and, although apparently dead, was given artificial respiration for an hour. At the end of this time it was seen that treatment was of no avail and the body was removed to the torpedo deck. By 0800, 18 August, all casualties were free from shock and in bunks, and those who were able to take food received coffee and toast. At this time each casualty was re-examined and classified according to injury. Sixteen patients with lacerated

wounds and burns were brought one by one to the sick bay, where definitive treatment was given. All lacerated wounds were thoroughly cleansed with saline solution, then sprinkled with sulfanamide powder and covered with sterile dressings. All burns were cleansed with soap and water and dressed with heavy dressings of boric acid ointment gauze.

While this treatment was being given in the sick bay, the chief pharmacist's mate supervised the cleansing and redistribution of the smoke exposure cases. These cases had previously been separated by the medical officer who had indicated the men well enough to take showers. While the showers were being taken and the cases with burns and wounds were being treated in the sick bay, bunks in the officers' country and crews' quarters were prepared so that each patient when treated could return to a clean bunk. By 0700, 19 August 1943, each patient had been examined for the third time and notes made for the health records. The total number of casualties was 48, with one dead--of these, 34 were transferred to a naval dispensary at Adak, Alaska.[17]

## Conclusion

It was observed that men over 35 years of age and men with arthritis, myalgic, or neuralgic pain history, including men with history of injury to major joints and the back, should not be sent

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17. Action Report, USS ABNER READ (DD526), Serial 006 of 26 Aug. 1943, p. 7.

into the Alaskan-Aleutian area. Moreover, additional vitamins should be provided in this area and overcrowding in quarters and barracks should be foreseen and remedied.[18]

A study of Japanese medical facilities was conducted and the medical officer concluded that their medical facilities, camp sanitation, general messing accommodations, and living quarters were inadequate by occidental standards.[19]

The Japanese water supply was constantly open to contamination and the water systems for the main camp area were inadequate.[20]

The Japanese clothing was considered to be inferior to that furnished to the Americans, with the exception of the felt mitt which hangs from the shoulder by a string and has a wide opening at the wrist and shooting fingers on the palm surface. The American mitt is leather, has a cumbersome finger arrangement and an elastic wrist.[21]

Japanese dispensaries were given the best available protection from bombs, shells, and strafing. In one instance the entire unit was underground, except for galleys and a few attendants' living quarters. In all the others the hospital units were built in tortuous ravines consisting of deeply revoted huts with nearby caves for shelters.[22]

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18. Sanitary Report, U. S. 45th Naval Construction Battalion, 1st Detachment, c/o Fleet Post Office, San Francisco, Calif., 1943, p. 12.
19. Survey of Japanese medical facilities as found on Kiska, by Howard G. Romig, Lieutenant (jg), (MC), USNR, p. 1.
20. Ibid., p. 2.
21. Ibid., p. 3.
22. Ibid., p. 4.

A detailed survey of the Alaskan sector of the 13th Naval District subsequent to the campaign of the Aleutians was conducted and a number of significant findings were made. It was determined that, in general, the morale of the personnel in the Aleutian area was good, with a small percentage of men developing situational neuroses of various degrees. It was suggested that a more liberal policy of evacuation of borderline cases before complete breakdown be adopted. As a rule, the only individuals in the construction battalions who were unable to withstand the stress of duty were the men past 40, who, in a sudden flash of patriotism, volunteered and then found that they could not keep up with the younger men in the rigorous climate and terrain doing the hardest type of work. It was also a fact that many of these were married men with children, and were dissatisfied in the possession of the knowledge that many individuals in the continental United States were at that time receiving inflated wages under the stress of a war economy.[23]

It was found, as is true throughout the service--whether it be in Panama, aboard ship, or the Alaskan sector--that medical officers are happy when they are busy and are fretful when they are not. Because of the organizational knots that were in the process of being untied by the medical officer in charge, there were some stations in the Alaskan sector that were overstaffed with medical officers.

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23. Medical Report of Alaskan Sector, 13th Naval District, W. L. Mann, Rear Admiral,(MC), USN, 15 Sept., 1943, p. 4.

This surplus had been maintained in view of the operations which were projected at Kiska but which failed to be productive of casualties.[24]

The morale of the Navy nurses was reputed to be high, although a more suitable type of uniform should have been authorized. It was reported that the advent of the Navy nurses made a marked change in hospitals. There was one patient with a fractured pelvis who protested having to take a daily bath, giving as the reason therefor the fact that he had been in the hospital for nine weeks and had improved satisfactorily without a bath. There were several other hardy individuals who objected to the compulsory use of sheets as such articles were not supposed to be required on the rugged frontier. The experienced chief nurse at the hospital involved, literally and figuratively cleaned up the situation with gusto in a few days.[25]

The government-issue clothing for officers and enlisted help was found to fall short of adequate protective needs. Shoes were not rugged enough to withstand the terrain. The practice of obtaining and using Army waterproof soles was common. All naval personnel were found to prefer Army woolen shirts and woolen trousers for working dress in cold weather. The possible development of protective head gear or transparent eye covering as a medium of protection against foreign bodies of the eye and sand storms was suggested.[26]

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24. Ibid., p. 5.
25. Ibid., pp. 6-7.
26. Ibid., p. 10.

THE ALEUTIANS

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# CHAPTER V

## THE GILBERTS

The Gilberts campaign is singularly significant to the Navy Medical Department in that this operation involved, for the first time, landings by American forces against defended coral atolls. Moreover, the lessons which were learned pointed the way to the modification of certain techniques employed in later campaigns during the advance across the Pacific.

Early in 1942 the Japanese had occupied the British controlled Gilbert Islands. Not until the closing months of 1943 were the American armed forces in a position to win back these outposts as a part of the far-flung strategy which was ultimately to carry the Americans to Honshu Island itself.

There are sixteen islands in the Gilbert Island group from Arorae in the southeast to Little Makin, which is not to be confused with its more important neighbor, Makin or Butaritari in the northwest. The most important of the Gilbert Islands is Tarawa Atoll, which provides the chief port of entry for the Gilberts. About one-quarter of the island group's 100 whites and 40 Asiatics lived on Tarawa prior to the war, along with about 3,000 of the 27,000 Micronesian natives. The Tarawa Atoll is composed of about twenty-five small islets, but the coral reefs form a passageway between them which is dry at low tide so that is possible to walk from one to the other. These twenty-five islets form a reverse "L"--

eighteen miles from north to south and twelve miles from the base east to west. An underwater coral reef connecting all of the atolls completes the triangle and encloses a large lagoon which is navigable by the largest vessels.

The most important of the twenty-five islets composing Tarawa Atoll is Betio (called Bititu on some of the maps) which is situated at the southwest corner of the Atoll. Betio is only two and one-fourth miles long and at its widest point is only one-half mile wide. The total area of the island is something less than one square mile.

For the purposes of convenience in understanding the operation, the Gilberts campaign may properly be considered in three parts: Tarawa (the attack on Betio); Makin; and Apamama (also called Abamama on some maps and in some reports). The Second Marine Division was scheduled to furnish the assault forces for the capture of Tarawa and Apamama and was designated as the Southern Attack Force, while the Twenty-seventh Infantry Division of the United States Army was to furnish the assault forces for the capture of Makin and was designated as the Northern Attack Force.

## TARAWA

The mission of the Fifth Amphibious Corps and the Fifth Amphibious Forces in the Galvanic Operation (Gilberts) was the seizure and occupation of Apamama on D-day in order to deny those atolls to the Japanese and to provide bases for the American forces.

D-day was set for 20 November 1943. The medical plans called for evacuation of casualties from the beaches to transports by small craft. Hospital ships were to be available by D plus 3 or D plus 4.

Despite the multitude of ships participating in the assault at Tarawa, conditions were very crowded aboard the ships. For example, the Second Marine Defense Battalion Landing Team 3/2, in command of Maj. John E. Schoettel, embarked with equipment on board the APA ARTHUR MIDDLETON at Wellington, New Zealand. The landing team with attached units consisted of 7 naval officers, 54 Marine officers, 52 Navy enlisted men, and 1,331 enlisted Marine personnel, or an aggregate of 1,444. There were bunk accomodations on the ARTHUR MIDDLETON for 86 officers and 1,137 enlisted personnel. It was necessary to provide Army-type cots for the overflow, these cots being set up in available space on the weather decks and below decks on the square of the hatches.[1]

Prior to the assault on Betio on 20 November, the entire island was devastated by air and naval gun-fire, but a number of strongly fortified installations could not be reduced. A total of about 3,000 tons of naval projectiles went onto the island. Having received several direct hits, one of the eight-inch coast defense

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1. Action Report, USS ARTHUR MIDDLETON, "Report of Landing Phase of Operations at Tarawa Atoll, Gilbert Islands for Dec. 1943," Serial 006, p. 4.

batteries and both of the 120 mm. AA batteries were silenced by naval gun-fire.[2]

In connection with the naval gun-fire against Betio, the commanding officer of the USS ANDERSON stated that the fact that no damage resulted to American forces could be considered wholly as a matter of good luck.

> This vessel discomforted those in the lagoon, regardless of its position on the Southern Beach, and those in the lagoon caused us much annoyance. At times there were four ricochets from five gun salvo, and regardless of what position we endeavored to take, we soon found it untenable when the ships in the lagoon fired. Half a dozen pieces of shrapnel were peiked up aboard. One officer was hit by the tracer plug of a projectile which was quite hot, and the location of the bruise proves that this officer was not seated.
>
> During the morning of the 21st, patrolled the south shore as closely as possible, at minimum speed to answer call fire without delay. A remarkable view was had to the effectiveness of our heavy ships enfilading the Jap positions on the southwest corner and south coast of Bititu. It is inconceivable that anyone could live through such a storm of shells. Immediately afterwards, the Marines advanced into the area and the Japs could be seen emerging from their holes. The fierceness of the fighting can be attested by all hands. The fact that the Japs were not entirely driven out by the heavy barrage is a tribute to his preparedness and industry in digging in.[3]

Aboard the battleships certain minor injuries and unfavorable

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2. Action Report, Commanding General, V Phib Corps, USMC, "Report of Galvanic Operation, Gilbert Islands, 20 Nov. - 4 Dec. 1943," vol. II, Serial 00205, p. 153.

3. Action Report, USS ANDERSON, "Gilbert Islands," Serial 0156 of 1 Dec. 1943, pp. 4, 5, 6.

conditions were observed. On the USS TENNESSEE the intense heat in the operating area made conditions entirely unfavorable to human efficiency.[4]

On the USS MARYLAND, eight men received minor injuries and burns in the servicing of the batteries during the bombardment. One man, an ARM 3/c, received a flesh wound from enemy antiaircraft fire while a passenger in a ship's plane. The blast effect of the main batteries' fire on personnel in the casements nearest the guns was considerable.[5]

Insofar as any Japanese defense fire was concerned, all batteries were silenced sometime before 0700, 20 November. According to the commanding officer of the USS MOBILE, no operations were observed within 800 yards of this ship, most of the fire having been directed at the batteries.[6]

The first three waves of each landing team were made up of LVT's. Although these waves were met by heavy opposition, they were able to get the men ashore. Some 20 LVT's were knocked out of these first three waves. A few were stopped by casualties to the drivers who had no replacements available. Those LVT's which

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4. Action Report, USS TENNESSEE, "Report of Fire Support Detail During Galvonic Operation," Serial 0010 of 10 Dec. 1943, p. 20.

5. Action Report, USS MARYLAND, "Bombardment of Bitio Island, Tarawa Atoll, Gilbert Islands", Serial 0013 of 20-22 Nov. 1943, pp. 6, 8.

6. Action Report, USS MOBILE, "Assault on and Occupation of Tarawa Atoll, Gilbert Islands," Serial 008 of 20-21 Nov. 1943, p. 18.

reached the beach crossed the coral reef and barbed wire without difficulty. Original plans were to go on inland past the first line of defense, but a sea wall barricade of coconut logs prevented this. Units landing initially were entangled with other landing units and with the enemy. The Japanese were well established in pill boxes and barricades within a few yards of the beach and it was a matter of digging them out, commencing at the beach and continuing on inland.[7]

The experience of the USS HEYWOOD, an APA, is illustrative of the tactical situation on D plus 1 day. This vessel landed one of the Marine Assault Landing Teams at Betio; in the initial stages, the landing of ammunition and badly needed equipment and supplies presented almost insurmountable difficulties. The HEYWOOD's beach party approached the pier and was driven off five times; it landed once, but was obliged to retire. Not until 1145 on 21 November was a successful landing made. On this ship alone, 277 Marine and naval casualties were received and treated.[8]

While adequate stocks of medical equipment were carried aboard the HEYWOOD, greater quantities of usual nursing supplies would have been helpful in handling the casualties. Among the items needed

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7. Action Report, Commanding General, V Phib Corps, USMC, "Report of Galvanic Operation", vol. I, Serial 00205 of 11 Jan. 1944, p. 12.

8. Action Report, USS HEYWOOD, "Capture of Tarawa, Gilbert Islands", Serial 00412 of 29 Nov. 1943, pp. 1, 2.

were bed pans, urinals, pajama suits, pillows, rubber pillow covers, rubber sheets, light foot wear, and drinking tubes. The kapok life jackets proved effective in protecting several members of boat crews from serious injuries by shrapnel, and their continued use by ships' personnel both on board and in the boats was recommended.[9]

In connection with the handling of casualties on assault transports, one of the APA's adopted the following preparation:

> Each ship must have a casualty receiving and dispersing center to examine and direct the flow of casualties to their proper destination. A medical officer examines each casualty in the receiving center and the hospital corpsman administers plasma and/or morphine where indicated before the patient is sent to surgery. Time is the important element and should be fully utilized.
>
> Any large ship should have one main operating room for the immediate treatment of the most serious casualties, augmented by several battle dressing stations functioning as operating rooms. All of the less serious patients are treated and disposed of at these supplementary operating rooms. Wooden stands for the suspension of plasma have been constructed and are placed between two stretchers lying on the deck, thus enabling two patients to receive plasma simultaneously. After the patients have received their plasma, they are taken to the proper operating rooms for treatment.
>
> The compartments reserved for casualties are so located as to be easily accessible from either the operating rooms or the receiving center. Each bunk is numbered and the number is placed on each clinical record to lessen the possibility of mis-identifying a patient. All serious patients who are to be sent to the main operating room are placed in the main sick bay after surgery for post-operative treatment. All of the confusion which would normally result if no planned procedure had been practiced is entirely eliminated.

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9. Ibid., p. 14.

During the invasion of Tarawa, the casualties were coming aboard with such rapidity that four operating rooms were kept in action day and night for four days. The previous training of the corpsmen in surgery showed to great advantage during this period. Two operating teams consisting of four hospital corpsmen for each operating room, alternated on six-hour watches.

The general treatment of open chest wounds, both gunshot and shrapnel, consisted of closing the wound area with a occlusive dressing, aspiration of the chest only when necessary and the treatment of shock. Sucking chest wounds were closed by sutures.

Abdominal cases received surgical intervention if the patient's general condition indicated. Many patients of this type were not brought aboard until several hours after they had received their wounds and their condition would not permit surgery. Plasma and blood intravenously were used extensively for these cases. The sulfa drugs were administered separately to all patients and contributed in no small measure to the low percent of fatalities.

Compound fractures received a high priority in the main operating room. The wounds were debrided and the fractures reduced under sodium pentothal anesthesia. Thomas splints and Buck's traction were applied to immobilize leg fractures and 5 to 8 days later these splints were removed, the fractures aligned, and plaster casts applied to reduce any possible movement of the fractured parts during evacuation to a naval hospital. All of the patients examined later at naval hospitals were found to be in excellent condition.

The simple fractures were splinted and then treated after the more serious casualties were disposed of. This technique enabled all fractures to be examined by X-ray and the correct alignment obtained.[10]

The heartiest cooperation among medical personnel was evidenced both on shore and aboard ship. One doctor and a pharmacist's mate gave immediate aid to a total of over 60 casualties brought

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10. Norman A. Randolph, "Handling Casualties on Assault Transports" in Hospital Corps Quarterly, vol. 17, No. 5, Sept. 1944, pp. 94-95.

aboard ship from the beach during the first day and a half of battle, while working under adverse conditions in an improvised dressing station in the mess hall.[11]

At 1200, on D plus 1 day, 21 November 1943, the situation on Betio began to improve. Prior to that time the entire situation had not been static. On D plus 2 days, 22 November 1943, the commanding general of the Second Marine Division moved his C. P. headquarters ashore, and on this day the mopping up stage had been begun. Preliminary casualty reports of the Second Marine Division indicated 692 killed in action, 64 died of wounds sustained in action, 173 missing, and 2,085 wounded in action.[12]

Concerning this Second Marine Division, which acquitted itself so gallantly at Tarawa, it is to be noted that on 22 September 1943, the average admissions to sick bay for all causes in the Division were 90 per day, of which 70 were malaria. At the time of its embarkation for the Tarawa operation, there were 8,643 men that had a history of malaria. These men were started on a treatment of one tablet of atabrine per day on 22 September, and within three weeks the average daily admissions for malaria had been reduced to twelve. Enroute to the combat area, the number of

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11. Action Report, Distribution of Commander Group Two, V Phib Force, Pacific Fleet, Serial 0014 of 9 Jan. 1944, p. 11.

12. Action Report Commanding General, V Phib Corps, USMC, vol. I, Serial 00205 of 11 Jan. 1944, pp. 10, 13.

admissions for malaria and all other causes was comparatively low. The number of patients held in ships' sick bays on D-day, 20 November 1943, was negligible.

Company aid men, four to each company, landed with their assault company, except in cases where enemy gunfire caused them to disperse.

Collecting section medical companies, consisting of 1 medical officer, 11 hospital corpsmen, 3 Marines, and 1 jeep ambulance, were sent in the second wave of boats but were unable to land until the early hours of 21 November 1943. (D plus 1 day). Upon landing, they established evacuation points on the beach. Transport medical sections arrived the same day between 0800 and 1200 and aided in the evacuation. Two main points of evacuation were established. Casualties were evacuated by amphibian tractors to the end of the pier where, if necessary, they were given further treatment and then transported by boats back to the transport. In some sections, rubber boats, instead of amphibian tractors, were used to take patients to transports.

On 22 November 1943, two Second Medical Battaltions were ordered ashore. They established blackout surgeries and were ready for operations within twelve hours.

Approximately 2,000 casualties were evacuated during the first three and one-half days that the main combat on Betio took place. The majority of casualties arrived on board the transport

within two hours after being hit, and others, because of heavy enemy gunfire, arrived as much as twelve hours after receiving injuries. On 24 November, an air evacuation officer arrived but no air evacuation was needed at that time.

In the Second Marine Division, 706 men were killed in action, 77 died of wounds received in action, and 214 were missing in action--a total of 997. Of this group, two were Navy medical officers and 27, hospital corpsmen. There were 2,091 wounded in action--two Navy medical officers and 48 hospital corpsmen.

All troops in the Second Marine Division, with the exception of one battalion, salted the water which they took ashore, and there were no cases of heat exhaustion. However, in the battalion which had failed to salt its water, there were approximately 100 cases of heat exhaustion which occurred on 23 November, but this condition was speedily rectified by the issuance of salt.

It was found that by employing canvas litters, waterproof pouches for supplies, and plywood leg splints, the equipment and supplies that would ordinarily sink were able to be floated in successfully. In most instances the dead were identified, but when doubt existed, dental charts were utilized. There were numerous instances where bodies were found with the head, face, or entire upper portion of the body destroyed. These bodies were finger-printed whenever possible, but there were a great many cases in which this procedure was impossible because of the rapid

decomposition of the bodies.

A number of recommendations were made by the medical officer in command: (1) all amphibian tractors should be equipped with brackets and 2" x 4" frames between the bulkheads to increase their carrying capacity to six stretchers; (2) all medical department personnel with assault troops should be supplied with paratroop type medical kit, and medical supplies carried by assault troops should be transported in waterproof packages; (3) canvas stretchers should replace the metal arm and leg splints, as a large number of these splints were lost in the ship-to-shore movement when landing boats were sunk; (4) all water taken ashore should be salted; (5) in landing operations similar to Betio, three APH ships should be assigned to a division for evacuation, one of these vessels carrying a full staff of doctors and corpsmen enabling them to perform many types of difficult surgery. They should have a bed capacity of 150 and, in addition, should be able to care for approximately 500 ambulatory cases. In the event that this type of ship should not be available, and APA's would have to be employed, one well-qualified surgeon, competent to perform many classes of abdominal surgery, should be assigned to such ship. Well-qualified eye surgeons should be available; and (6) it was further recommended that if the Division were supplied with five LST's on which could be embarked the hospital section of each medical company, casualties could be evacuated rapidly to the LST's and those casualties requiring extensive surgery could then be transported to an APA

in the event that APH's were not available. The suggestion was made that if LST's were employed, approximately 85 percent of all casualties received could be treated and retained on board.[13]

On Tarawa the burial of the American and enemy dead proceeded too slowly. On 24 November, corpses were putrifying on all sections of the island. Special problems were raised by the presence of large enemy block houses full of rotting and burning Japanese dead. On 23 November, an order had been sent out by the Division headquarters requiring the Japanese to be buried in available shell holes but this did not cover those areas around the rim of Betio where heavy casualties had occurred and where no units were bivouacked. Moreover, there had been ample opportunity for fly breeding and an immediate problem in sanitation was presented.

Despite the fact that the medical department as a whole is considered to have done a heroic job, Commander Herring pointed out that the operation had proved again that hospital corpsmen must be taught how to conduct themselves under fire, inasmuch as the percent of medical officers and hospital corpsmen lost with the assault battalions was in a ratio with that of the combat troops.

On 3 December, an inspection of Betio revealed the

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13. F. R. Moore, Captain,(MC), USN, "Report of the Medical Department Activities at Tarawa," 17 Feb. 1944.

continuance of highly unsanitary conditions. Food remnants and feces had been left uncovered. Although most of the cadavers had been buried by this time, flies and fly-breeding areas were numerous. Dysentery was the greatest threat at this stage of proceedings, and a recommendation was made to the island commander that sanitary toilets, screened galleys, screened mess halls, and fly traps be constructed immediately. The island commander acted at once, but it was found that the amount of lumber, screening and other necessary supplies was limited. Moreover, no one person or officer had any knowledge of what was present, where it was, or what was later to be shipped. For example, one unit had been supplied with prefabricated heads, but there were unable to locate all of the components and it was not until 15 December that they were able to put two eight-hole latrines in operation. All in all, the conditions on 3 December were dangerous. Crater holes, garbage and trash dumps, heads (both open and overwater), cadavers (unburied and incompletely buried), ration dumps and pig sties presented major sanitary hazards.

The ration dumps were left unguarded and personnel walked in and helped themselves to the more desirable items, consumed portions of their booty and then would discard the cans anywhere, thereby furnishing excellent potential breeding places for mosquitoes. There had been no provision for rationing several hundred personnel in the boat pool and they were living as best they could. The water which was distilled from wells had an offensive taste,

apparently due to the methane and sulfides derived from the putrescent organic matter. Containers for the water were unclean and an order that all water be chlorinated was impossible of effectuation on account of the lack of chlorine.

Tuberculosis, yaws, various skin diseases, and some bacillary and amoebic dysentery appeared among the natives.[14]

By March 1944, conditions on Tarawa Atoll were excellent, and ample medical facilities had been provided. Sanitation was being cared for as well as possible, although flies and mosquitoes still present particular problems.[15]

## Makin

As at Tarawa, Makin was subjected to intensive naval gunfire and air bombardment, and it was felt that this preliminary softening made the capture of the atoll fifty percent easier because of its devastating and its casualty-producing quality prior to the landing.[16]

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14. Action Report of the Gilbert Islands Operation, Distribution of Headquarters, V Phib Corps, Serial 00205 of 11 Jan. 1944, pp. 319, 321, 323-325; also General Order #5, Island Commander and Air Commander, Tarawa, 11 Dec. 1943.

15. Ltr. of Adm. W. C. Chambers, (MC), USN, to Vice Adm. R. T McIntire, (MC), USN, 21 Mar. 1944.

16. Action Report Commanding General, V Phib Corps, USMC, vol. II, Serial 00205 of 11 Jan. 1944, p. 152.

Aboard the USS PENNSYLVANIA, seven men fainted in the magazines and several others were temporarily incapacitated for duty because of the heat and ether fumes. Magazine vents were closed at the beginning of the bombardment but were opened for short periods of forty-five minutes to one hour thereafter. The men in the magazines were relieved by men from the handling rooms during lulls in the firing. The after magazine temperatures mounted as high as 115° F., but the forward group magazines stayed below 100° F.[17]

At the conclusion of the bombardment of Makin by the USS NEW MEXICO, eight gun captains had burns and black-colored welts under the toweling which they had strapped around their forearms to sponge off gun parts. The burns were on the underside of the forearm. The remaining gun captains who had held the toweling in their hands sustained no burns or welts and it was recommended that in the future the wrapping of the arm be discontinued. Under conditions of prolonged firing in the tropics, provision must be made to send relief crews into the magazines at intervals not exceeding thirty minutes. Sixteen prostrations occurred in the magazines and lower handling rooms, apparently because of the heat and the ether fumes. Six of the men had to be removed by stretchers and a number of others were intoxicated from the fumes but required

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17. Action Report for the Bombardment of Makin Island, USS PENNSYLVANIA, Serial 005 of 5 Dec. 1943, p. 5.

no treatment. Fortunately all individuals concerned recovered promptly on leaving the environment.[18]

A condition aboard the USS ENTERPRISE, operating as a unit of Task Group 50.2, also troubled the other cruisers and ships of the forces which participated directly and indirectly in the capture of Makin. The deck and engineering crews of the ENTERPRISE were seriously affected by fatigue on account of the round-the-clock ready status of operations which prevailed over a long period of time.[19]

Little opposition was found on making the initial landing on Makin at 0830, 20 November 1943. On 21 November, the commanding general of the corps went ashore at Makin, and at 1430 on 22 November, Maj. Gen. Ralph C. Smith went ashore and at that time reported that all organized resistance had ceased. The re-embarkation of the troops from Makin commenced on the morning of 23 November, and the island commander, Colonel Tenney, assumed command at 1450 on 23 November.

The casualties for the Makin operation, as reported by the 27th Infantry Division, were 56 dead, 131 sick and wounded in action, and 1 missing. The Third Battalion of the 165th Infantry

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18. Action Report, "Bombardment of Makin Island", Commander Task Unit, 52.2.2, Enclosure "B", the USS NEW MEXICO, Serial 0037 of 14 Dec. 1943, pp. 5-6.

19. Action Report, USS ENTERPRISE, Serial 00177 of 15 Dec. 1943, pp. 7, 9.

reinforced (formerly better known as The Fighting 69th), the 7th Army Defense Battalion, and other air and ground forces provided the garrison retained on Makin.[20]

The reports on the medical situation at Makin indicate that the medical plans which had been worked out in advance functioned exceedingly well. At no time were there a large enough number of casualties being handled to put a strain on facilities. There was excellent cooperation between installations on shore and the beach parties. Except in isolated cases, evacuation was prompt--casualties reaching the beach rapidly. Full use was made of transports' medical facilities, and of the 131 wounded in action, only 26 remained in a clearing station on 24 November. The transports put out to sea each night about one hour before sundown and did not return until sunrise. During that interval, casualties were kept in the clearing station and evacuated promptly when boats were available. Forty of the patients were evacuated by flying boat from Makin to Funafuti and thence by land plane to Pearl Harbor.[21]

Prior to the engagement on Makin, the landing force surgeon had prepared and published an excellent sanitary order

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20. Action Report, Commanding General, V Phib Corps, USMC, vol. I, Serial 00205 of 11 Jan. 1944, p. 11.

21. Action Report, "Gilbert Islands Operation", Distribution of Headquarters of the V Phib Corps, Serial 00205 of 11 Jan. 1944, pp. 316-317.

outlining the routine sanitary procedure both during the assault and occupation phases. Water was available in quantity from five-gallon containers which had been brought ashore with the troops. Rations were present in sufficient quantities, both K and C types.

The burial of the dead was improperly handled. No attempt had been made to bury the Japanese dead until 22 November, although the Americans had been in possession of the area from early on 20 November. The graves' registration party was responsible for the burial of all dead, but no one would take the initiative, although many of the dead were lying in trenches that could easily have been covered over in a short period of time by using trench shovels. The handling of the American dead was somewhat better, but the regimental colonel was left lying on the field of battle from 1500 on D-day until 1100 on D plus 1 day although vehicles of all sorts were going up and down the road within 20 feet of his and other American bodies.[22]

On 24 November 1943, at 0511, the USS LISCOMBE BAY (CVE56), which had been operating with Task Group 52.13, was torpedoed off Makin and sank in twenty-three minutes. Both Rear Admiral Mullinix and Captain Wiltsie were killed. Motor wheel boats and life rafts were used to rescue personnel from the area about the sinking ship; the destroyers USS MORRIS, USS HUGHES and USS HULL picked up

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22. Ibid., p. 318.

survivors. Heavy lines, trailing lines with bow lines, and nettings over the side were used to good advantage in getting survivors aboard. Blast injuries were predominant among the rescued. According to the survivors, the greatest difficulty was experienced in abandoning ship, as all passages were cut off by flames, exploding ammunition, and other combustibles. Although six Carlin type life rafts were noted in the debris, few men had reached them and most survivors were clinging to the larger pieces of floating wreckage. Those men who had kapok life jackets appeared to float and swim with the greater ease.

At 0702 the first survivors were brought aboard the MORRIS. Most of them were covered with oil and it was difficult to determine the extent of their burns. The more serious casualties were taken directly to the ward room where they were seen by the medical officer, treated and placed in bunks in Officers' Country. Many of the minor lacerations and burns were treated by the hospital corpsmen. It was notable that not one of the men complained voluntarily of pain; and while many were being examined, they insisted that they were not badly injured and suggested that the medical officer care for their shipmates first. Approximately 60 casualties were treated aboard the MORRIS. There were surprisingly few cases of shock although many of the men were in a somewhat dazed condition.[23]

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23. Action Report, Commander Task Group 52.13, Commander Battleship Division 3, Serial 0034 of 11 Dec. 1943; Report by the medical officer of the USS MORRIS, Enclosure "B", p. 1.

The general handling of survivors taken aboard the HUGHES was supervised by the executive officer. The lower handling rooms, repair party, and other necessary personnel were secured from their battle stations to make ready to handle survivors at 0600. The HUGHES commenced receiving survivors from the water on the port side, and from that time until 0815, men were taken aboard over the forecastle via ladder, over both sides amidships, and over the stern. Wounded men who were unable to walk were brought aboard by the use of hammocks lowered over the side. A life raft was brought alongside the HUGHES for the men to rest on while waiting to be taken on board. Urgent cases were guided or carried to the after mess hall. Those with minor wounds were taken to the clearing stations. These were located with a view to keeping survivors already on board clear of both sides to permit better handling of those still in the water. At each station, Diesel oil and clean rags were placed to enable survivors to rid themselves of fuel oil. The gunnery officer of the HUGHES supervised the directing of the men to the showers and then to berthing spaces where chewing gum, smoking articles, and other comfort items were issued. The supply officer issued dungarees, underwear and shorts. The only footwear available was overshoes, which were issued until the supply was exhausted. The galley made hot soup, coffee and sandwiches, which were passed around to the survivors, all of whom were in excellent spirits.

The greatest problem in handling patients was the thick

coating of fuel oil on each. To combat this, the medical officer set up burn teams, each consisting of two non-medical assistants who removed oil from patients, cleansed burns, and applied sulfa powder or boric acid ointment dressing. On being brought aboard, patients were carefully segregated by the pharmacist's mate who was at the after dressing station. Two trained officers administered morphine and morphine tags, merthiolate, sulfathiazole and various first-aid treatments as they saw fit. All survivors were transferred to the USS LEONARD WOOD between 1010 and 1100. The stretcher cases were taken aft. A crane from the LEONARD WOOD with slings to fit two canvas stretchers was lowered, and the men able to walk were transferred forward to the HUGHES' forecastle via gangplank through a cargo hole in the side of the LEONARD WOOD.[24]

## APAMAMA

In addition to the difficult task of capturing Tarawa, the Second Marine Division had been assigned to capture Apamama in the Gilberts. As events transpired, this was the easiest operation of any in that group.

The USS NAUTILUS, which was transporting the invading troops, was damaged by enemy action enroute to Apamama, but it was able to take its position off the island and furnish excellent fire support. There were only 3 American casualties at Apamama,

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24. Ibid., Report by CO, USS HUGHES, pp. 1-3.

1 killed in action and 2 wounded. All of the Japanese there were killed in action or committed suicide.[25]

On 24 November, the hospital ship USS SOLACE arrived at its rendezvous with evacuation vessels to the lee of Apamama where it received some 234 patients for further treatment who had been casualties in the battle of Tarawa. The USS RELIEF also came to Apamama but it found that there were no patients remaining to be evacuated.[26]

Apamama was secured on 26 November 1943.[27]

## Summary and Conclusion

When the high command of the Navy Medical Department planned its strategy in connection with the capture of Tarawa, the inherent difficulties presented by this amphibious operation against a rocky atoll were not overlooked. However, the ability of the Japanese to survive the tremendous bombardment and bombings and the problem of the reef off Betio upset the details of carefully laid military and medical strategy. Only the most necessary first aid could be rendered on the beach, and wounded personnel had to be evacuated

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25. Action Report, Commanding General V Phib Corps, USMC, vol. I, Serial 00205 of 11 Jan. 1944, p. 14.

26. War Diary, USS SOLACE (AH5), Nov. 1943, p. 3.

27. Action Report, Commanding General V Phib Corps, USMC, vol. I, Serial 00205 of 11 Jan. 1944, p. 14.

to the nearest transports by whatever boats available irrespective of the latter's preparation for the handling of casualties. The care and evacuation of casualties was further complicated by the fact that the hospital ships USS SOLACE and USS RELIEF did not arrive until 24 November, and even then they rendezvoused near Apamama, rather than at Tarawa. The remarkable thing about the Tarawa campaign from a medical viewpoint was that despite the unexpected difficulties presented, the Navy Medical Department was able to improvise successfully so that casualties received medical care and were evacuated in a reasonably satisfactory manner. Moreover, the lessons learned on Tarawa's bloody beaches proved invaluable in planning for later amphibious operations.

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# CHAPTER VI

## NEW GUINEA

While the United States forces were rolling back the Japanese at Attu, Tarawa, Guadalcanal, and New Georgia, another bitterly contested campaign was being fought for control of the important Melanesian island of New Guinea, second largest island in the world. During the early phases of the war, Allied forces on New Guinea had provided the first effective check upon the relentless Japanese thrust southward toward Australia. By the end of 1942, however, the Japanese were virtually in control of the island. Allied offensives in 1943 and 1944 turned the tide; the Japanese were forced back and Australia was saved.

Direction of the Allied offensive against the Japanese on New Guinea and on the surrounding islands was given to United States Army forces, but the United States Navy contributed to the success of operations in the New Guinea theatre by providing the Army with transportation and with gunfire support for its operations.

Both Army and Navy medical staffs in the New Guinea theatre were confronted with serious problems of health and sanitation. Moreover, care of the sick and injured and the handling of casualties were rendered difficult by the

island's tropical climate and rugged terrain. Allied forces found only a few scattered settlements along the coast, while much of the interior was unexplored territory. There had never been any well-integrated health organization under British or Dutch rule and the Japanese had made little headway in dealing with the problem. Sanitation was bad; the water was polluted; no provision had been made for sewage; malaria, dengue fever, filariasis, and other tropical diseases were common.[1]

A detailed account of the activities of the Navy Medical Department throughout the New Guinea operations would provide little significant information that has not been presented in previous chapters. For purposes of this discussion, therefore, the work of the Navy Medical Department in the New Guinea theatre will be confined to a narration of its activities in connection with (1) the Finschhafen operation and (2) the Tanahmerah Bay-Humboldt Bay-Aitape operation.

## Finschhafen Operation

The objective of this operation was the capture and occupation of Finschhafen, which is approximately 64 miles beyond Lae on the Huron Gulf. The purpose of the occupation was to develop the Finschhafen area as a concentration point

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1. "Medical and Sanitary Data on Dutch New Guinea," War Department Technical Bulletin, 10 Mar. 1944.

and staging area for further operations and as an advanced base for aircraft and light surface ships. Originally it had been planned to stage the operation four weeks after the fall of Lae. However, the quick capture of Salamaua and Lae made it desirable to accelerate the offensive against Finschhafen. Operations commenced on 22 September 1943, six days after the fall of Lae. It was impossible to have rehearsals for any of the men participating, including the Navy Medical Department.

Although the enemy counter-attacks against the American troops in the Finschhafen area were weak, they did some damage and caused moderate casualties.[2]

The Finschhafen operation, which was successfully concluded on the morning of 2 October 1943, demonstrated the need for a naval medical officer on the beach to act as liaison between the shore party medical organization and the craft which were to evacuate casualties. There were instances of several casualties being evacuated by LCI's, when LST's, which were equipped to provide surgical attention and reasonable comfort, were due to beach within an hour.[3]

Insofar as the ships which participated in the amphibious operation at Finschhafen were concerned, there were

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2. Distribution of Commander, VII Phib Force, Serial 00294 and Endorsement thereto, of 23 Oct. 1943, pp. 11, 13, 18, 19.

3. Ibid., p. 5.

no unusual medical problems presented inasmuch as the Navy men were able to deliver the Army troops ashore and return to their respective ships before the Japanese attack was felt. There were a number of routine rescues of personnel from aircraft that had made forced water landings or had crashed at sea as a result of enemy action, but their treatment was routine. The admissions for gonococcus infection were at a minimum aboard ship for obvious reasons, and these cases were treated with penicillin when it was released for that purpose.[4]

From a review of a number of sanitary reports, it had been observed that many recommendations were made urging the importance of all men on the topside to wear life-jackets during periods of action and storms.[5]

Tanahmerah Bay-Humboldt Bay-Aitape Operation

Of all the operations associated with the New Guinea campaigns, the Navy Medical Corps had its greatest activity during the Tahahmerah Bay-Humboldt Bay-Aitape operation in the spring of 1944. This was the largest amphibious operation which had been carried out in the Southwest Pacific area. It included landings in three separate localities on the northwest coast of

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4. Annual Sanitary Report for 1944, USS BATAAN (CVL39)

5. Annual Sanitary Report, USS SAN FRANCISCO, 1944.

New Guinea: the eastern landing at Tanahmerah Bay, the central landing thirty miles to the eastward in the Humboldt Bay (Hollandia) area, and the eastern landing about ninety miles further to the eastward at Aitape.[6]

There were upwards of 200 ships engaged in these operations in which the Navy Medical Department gave a good account of itself. The total forces landed by the United States Navy, including the Army and its air wing, amounted to 79,800 personnel. It was contemplated by the higher echelons responsible for the planning of this enormous operation that more than 50,000 tons of bulk stores and 3,000 vehicles should be landed during the first three days and that larger quantities would be beached upon the attainment of the objective.[7]

The medical plan evolved by those responsible had been thoroughly worked out. It was anticipated that the evacuation of all casualties from the several beaches was to be based on the employment of specially equipped LST's. Reference will be made later to the extraordinary activities of the famed LST 464, whose exploits in these operations have justly achieved distinction in the annals of the Navy Medical Department. There were

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6. Commander Task Force 77 (Commander Attack Force), Report of Tanahmerah Bay-Humboldt Bay-Aitape Operation, Serial 00468, 6 May 1944, p. 4.

7. Ibid., p. 4.

sufficient of these designated vessels to permit an allotment of at least one evacuation LST to each echelon.

In an emergency, evacuation of casualties would be provided by APA's, APD's, and LCI's. It was also ordered that an APA be held in readiness at Cape Cretin for evacuation purposes if it should be required about D plus 8.[8]

Each of the specially equipped LST's carried a surgical team and the troop compartments were fitted for examinations and operations. Moreover, in each group of six or seven LST's, there was an emergency surgical team consisting of 2 surgeons and 10 hospital corpsmen to perform definitive surgery.[9] Access to the examination room on each surgical LST was obtained by cutting a stretcher hatch through the bulkhead.[10]

All LST's had one troop compartment ready as an operating room and they were each assigned 1 medical officer and 3 hospital corpsmen. The medical organization on each of the beaches included a naval beach medical officer with each beach party. He was charged with the maintenance of close liaison with the landing forces evacuation officer and he was further responsible for the routing of all casualties from

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8. Ibid., p. 21.

9. Ibid., pp. 21, 42, 43.

10. Ibid., p. 21.

the shore to the appropriate ~~ships or craft~~.[11]

The objective of these operations was to seize and occupy the Tanahmerah Bay-Humboldt Bay-Aitape areas; to establish at Aitape minor air and naval facilities; and to set up in the Humboldt Bay-Tanahmerah Bay-Area a major air base, minor naval facilities, and an intermediate supply base for the purpose of supporting operations to the westward. Task Force 77, which was responsible for the effectuation of the project, was required to move a portion of the invasion forces over 1,000 miles by sea in order to accomplish the isolation of an estimated 50,000 Japanese troops between the advanced positions previously maintained by the Allies on the New Guinea coast and these new positions.[12]

Landings were effected simultaneously at Tanahmerah Bay, Humboldt Bay (Hollandia) and Aitape on 22 April 1944. These operations were apparently a complete surprise to the Japanese. This factor, combined with intense air and naval bombardment, served to eliminate opposition and to permit all landings to be made with a minimum of casualties. Hollandia air fields were captured on 26 April, one strip of which was ready for use on 30 April. Both of the Aitape air fields were

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11. Ibid., pp. 21, 43.

12. Ibid., p. 4, 6.

secured by 22 April and Allied fighters were able to commence operations on 24 April.[13]

In accordance with the over-all medical plan, one complete medical battalion landed with each United States naval beach party at each main beach. All casualties were processed through the collecting station and the Navy beach medical officer, after which they were sent aboard an LST for medical attention and evacuation.[14]

The initial casualties were very light. For example, at Aitape the total casualties evacuated on D-day were 1 stretcher case, 9 Army and 3 Javanese; ambulatory, 7 Army are 7 Javanese. On D plus 1 day the stretcher cases numbered 4 Army and 1 Japanese, together with 3 ambulatory Army cases.[15]

During this campaign, which was a continuation of the New Guinea-Solomons salient, the jungle swamp experience of the medical department in the earlier operations stood it in good stead. The men were kept in excellent condition and were evacuated to quieter base and fleet hospitals whenever the situation so demanded. The medical planning, which had occupied so much time and thought, now bore fruit, particularly with respect to the evacuation of casualties. Based upon previous experiences, a medical officer was aboard all control vessels

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13. Ibid., p. 7.

14. Ibid., pp. 15, 43.

15. Ibid., p. 43.

so as to bring about a better apportionment of casualties to ships and of medical supplies and equipment to the various shore activities. The chain of evacuation had been simplified so that patients reached the transports where they could be given definitive treatment more quickly.[16]

Despite the subjection of ships of Task Force 77 to heavy air raids by the Japanese, the casualties sustained in the New Guinea operations were relatively light. The experiences of the USS STEVENS were typical in that the medical personnel aboard were constantly on the alert for the presence of infectious and tropical diseases. There were no admissions for venereal diseases, which was a direct result of the life of strict celibacy which the men were obliged to lead. Respiratory infections were practically unknown. At no time were the men permitted to go ashore after sundown, which rule had a direct bearing on the excellent malaria and filariasis record of the ship. Strict personnel hygiene was enforced, especially concerning the care of the skin and feet, with frequent changing of clothing and adequate utilization of soap and water advised. Finally, whenever anchored, the USS STEVENS was always at a comfortable distance from shore.[17]

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16. Report of the Bureau of Medicine and Surgery on Activities of the Medical Department, 1 Mar. to 31 Dec. 1944, p. 2.

17. Annual Sanitary Report of the USS STEVENS (DD479), 1944.

The over-all medical plan as set up by the Army provided that amphibious force ships should load and transport troops and their equipment to the beachhead, protecting them en route and during the landing. After the ships had accomplished this mission they were to withdraw so as to bring forward more troops and supplies, leaving casualty care to the Army. The Navy Medical Department did not believe this plan to be feasible inasmuch as casualties are suffered almost immediately on landing and well before the Army medical officers can do more than render first aid. Anticipating difficulty, the Navy Medical Department prepared to furnish initial care and evacuation for casualties during the several New Guinea landings. Surgical LST's were beached and utilized to provide immediate surgical care for the wounded, after which they were evacuated to other ships. Although initial casualties were light, it was fortunate that the Navy had foreseen their needs and had provided for them. Another advance was the creation of five surgical specialty teams each of which was composed of a specialist and two hospital corpsmen. These teams embraced the fields of orthopedics, urology, anesthesia, EENT, and thoracic surgery. They were on call to care for special cases and to act as consultants for other medical officers.[18]

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18. Annual Sanitary Report of the VII Phib Forces, 1944, pp. 3-4.

The few dead were buried ashore.[19] One of the most interesting of the vessels participating in the New Guinea theater was the USS LST 464, which had been selected by the commander of the 7th Amphibious Forces and equipped to provide emergency hospital facilities.

LST 464 had a ward on the tank deck with 60 bunks in triple tiers. Four surgical beds were available for those seriously ill, and among other facilities were a surgery, X-ray room, dental office, sterilizing room, laboratory and dressing room. There was a second ward forward, a sick officers' quarters, a consultation room for out patients, and a laundry. Stationed at Cape Cretin, the LST 464 served as a first-aid and evacuation ship providing hospital care and medical consultation as well as medical services to the units in the area until adequate shore facilities could share the burden. It was the policy of the medical department aboard LST 464 to keep only those cases that could be sent to duty in 30 days or less. All other patients were evacuated to the rear area. Navy medical authorities have pointed out certain disadvantages of using an LST to provide hospital care, namely, the characteristic LST roll, the oppressive heat aboard it in a tropical area and the crowding of officer personnel into barely adequate living quarters. There was also some difficulty in providing suitable food aboard LST 464,

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19. Annex I to Task Force 77, Operations Plan 3-44, p. 4.

since it was known to the supply ships merely as an LST and therefore not entitled to supplementary supplies.[20]

## Summary

In summary it may be said that the Medical Department of the United States Navy functioned effectively in the New Guinea theatre during the closing months of 1943 and the spring of 1944. Despite the fact that operations in this theater in 1944 were the largest amphibious undertaking to date in that area, adequate and careful planning of the medical campaign as an integral part of the over-all military strategy served to facilitate the prompt and effective care and evacuation of casualties.

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20. History of the Medical Department of the USS LST 464, 17 Dec. 1945.

NEW GUINEA

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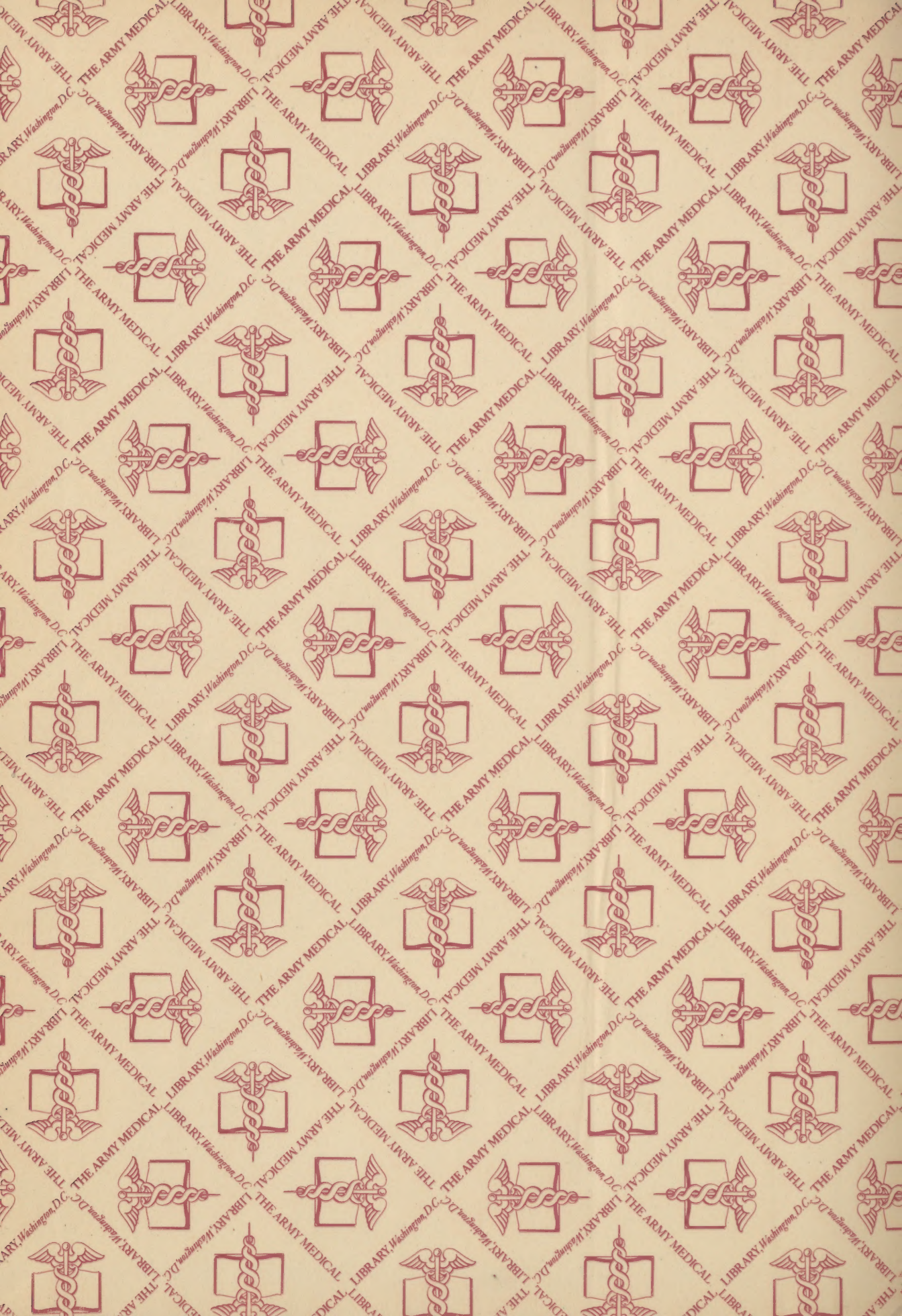
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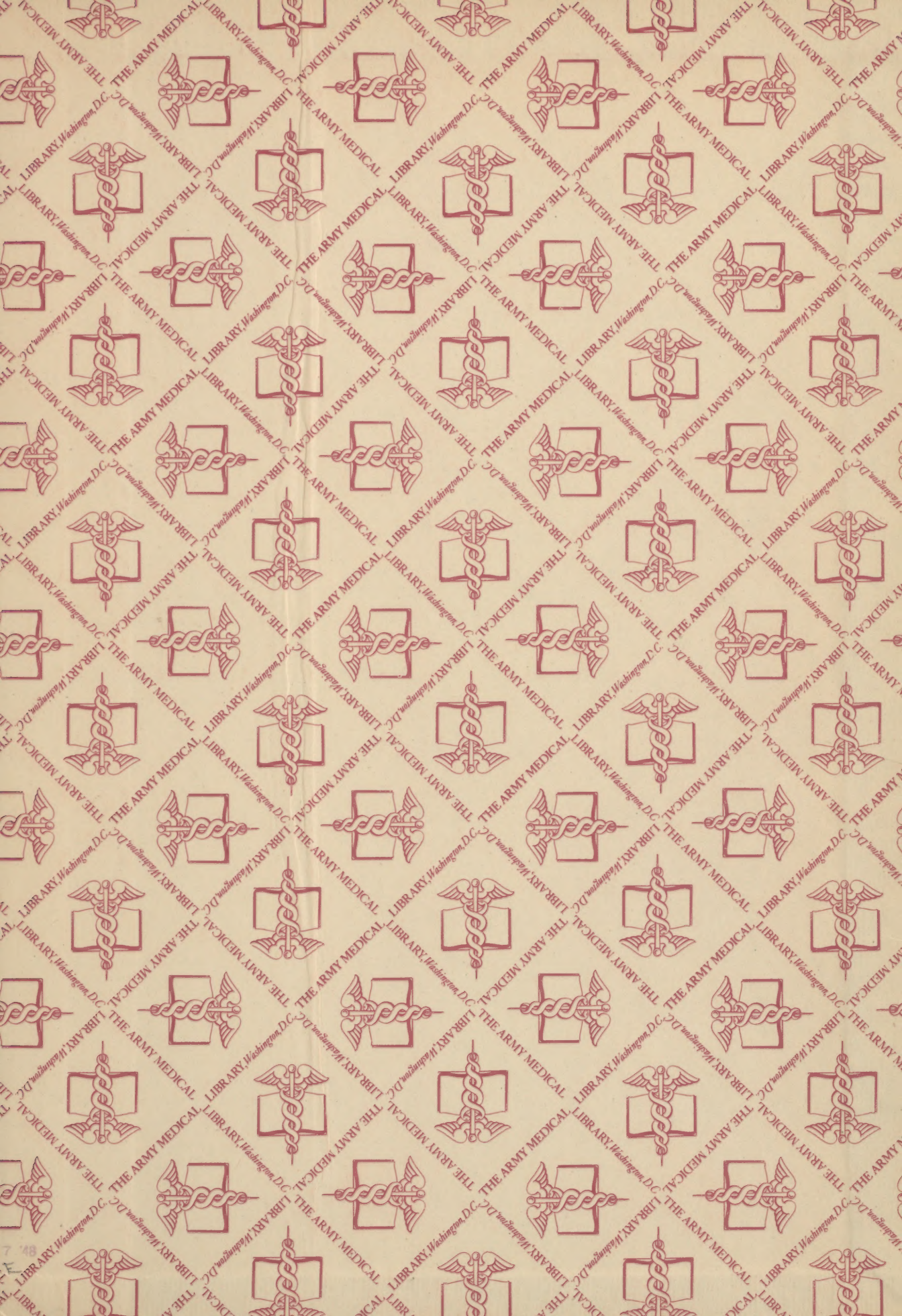
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